THE IRON AGE

New York, Thursday, February 10, 1910.

THE VANCOUVER STEEL FOUNDRY.

The Only Steel Foundry in Canada West of the Great Lakes.

The demand for steel castings in the western part of Canada has increased with the rapid development of that section. Machinery used in the lumber and mining industries must be constructed to withstand very heavy work. Steel castings, which enter largely into the manufacture of this class of machinery, had to be shipped from the eastern part of Canada or imported from the United States or England. This was expensive because of high freight rates and long deliveries.

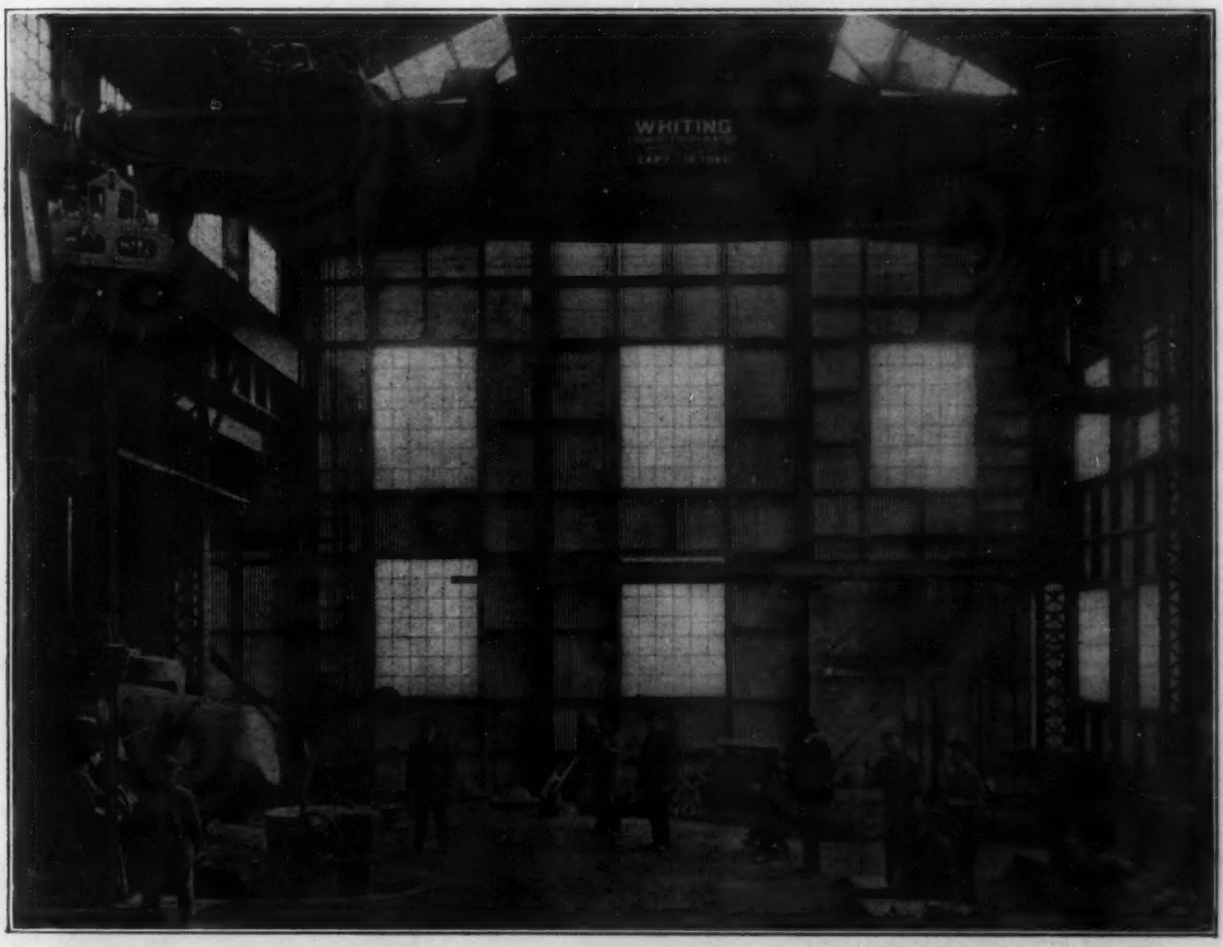

Fig. 1.—A View in the New Steel Foundry of the Vancouver Engineering Works, Ltd., Vancouver, British Columbia.

Realizing the growing need in that portion of the Dominion, early in 1909 the Vancouver Engineering Works, Ltd., decided to add a steel foundry to its plant at Vancouver, British Columbia. The side blown converter for making steel was adopted after careful consideration of the most economical process for producing a light tonnage and after personal inspection of various plants by F. L. Leighton, the general manager. In May, 1909, the Whiting Foundry Equipment Company, Harvey, Ill., was commissioned to design and equip the steel foundry. Erection of the plant was commenced in June and the equipment installed during the following September. The first blow of steel was successfully made October 12 under the supervision of the Whiting Company's steel foundry engineer.

The plant has a present capacity of eight tons per day and is so designed that extensions for handling double that capacity can be made as required without interrupting the operation of the present foundry. It is of steel construction throughout, having a main bay 120 ft. long and 50 ft. wide, with a side bay 120 ft. long and 30 ft. wide, as shown on the ground plan, Fig. 2. The side bay is designed to provide the most compact grouping of the melting and converting department, the coreroom, sand mill and cleaning department, without in any way interfering with the economical operation of each. In the design every effort was made to secure a continuous system in order that the raw material might be converted into finished castings without any reverse movements. The steel foundry is so arranged in the plot of the general plant that the movement of all departments is in the direction of the castings storehouse.

The cupola is the standard Whiting No. 4, and the hight from floor level to top of the stack is 35 ft. The melting capacity is about seven tons per hour. The cupola charging floor is 22 ft. long and 20 ft. wide, and is served by a two-ton electric elevator having a lift of 16 ft. To facilitate the handling of melting stock an industrial track of 24-in. gauge connects the

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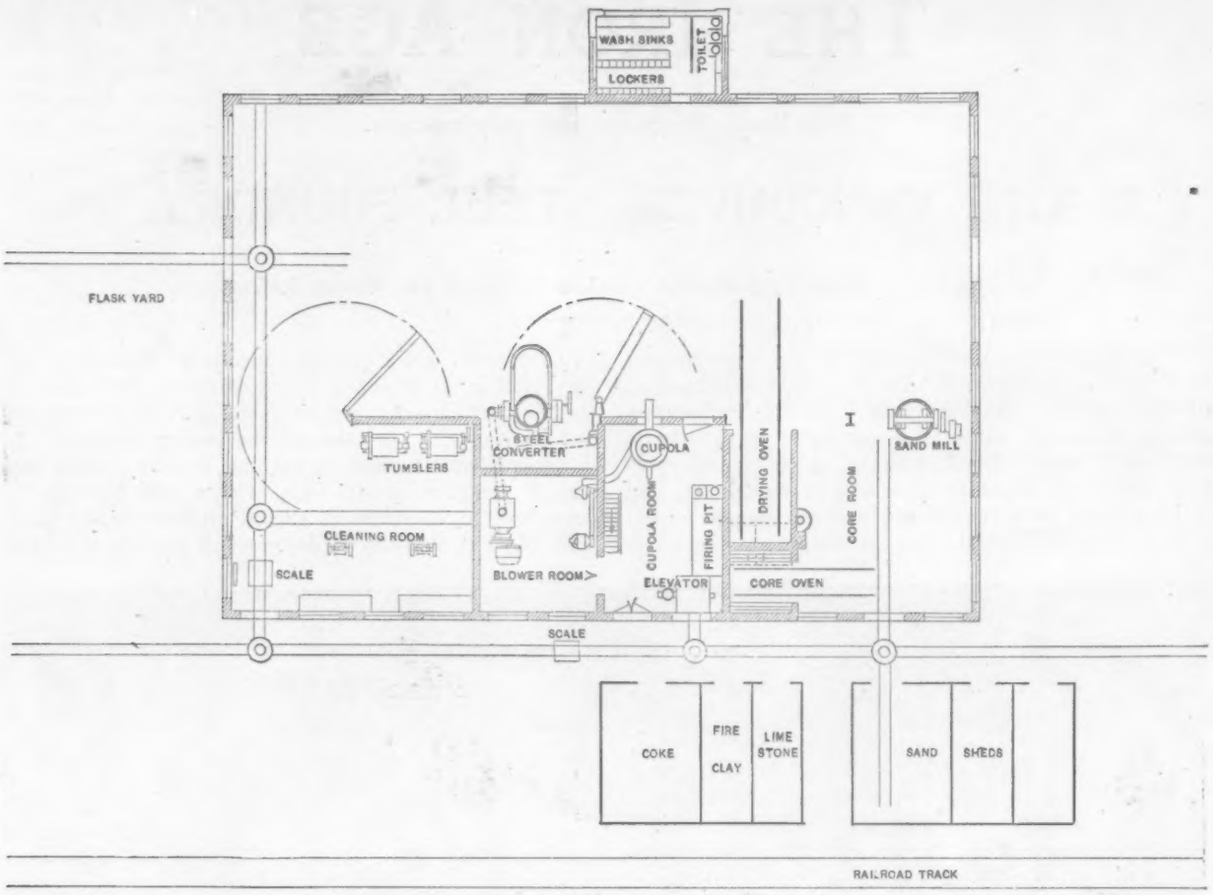


Fig. 2.—Plan of the Vancouver Engineering Works Steel Foundry.

elevator with the stock yard. Iron is tapped from the cupola into a 6000-lb. ladle carried by a pneumatic jib crane of four tons capacity, as shown in Fig. 3. Two taps are made to obtain a full charge for the converter. This is done to avoid holding the molten iron in the hearth of the cupola, where it is exposed to the incandescent coke, from which it will absorb sulphur, especially if the manganese content is low. After the ladle is filled the jib crane hoists it to the pouring position, shown in Fig. 4, and the iron is transferred to the converter to be blown into steel.

Since no phosphorus or sulphur can be removed, owing to the acid lining of the converter, it is necessary to melt an iron running low in these elements, the maximum limit being 0.04 per cent. for each. The manganese content ranges from 0.60 per cent. to 1.50

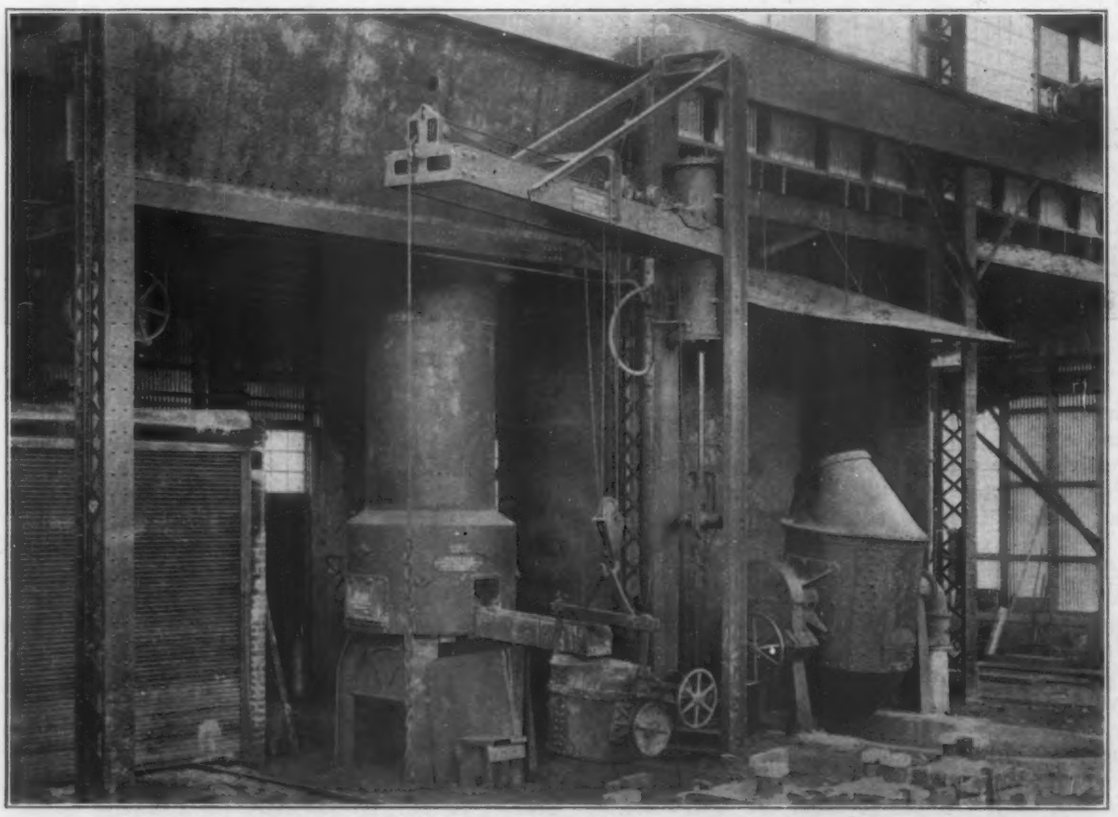


Fig. 3.—The Whiting Cupola and Converter, and the Jib Crane and Ladle Serving Them.

per cent. The cupola charge is so proportioned as to give about 1 per cent. of manganese, this limit being set because it counteracts the affinity of the iron for the sulphur in the coke, and also minimizes the wear on the converter lining. As the percentage of silicon in the cupola charge should be from 1.80 per cent. to 2 per cent., in the iron it ranges from 1.20 per cent. to 3.50 per cent. The extensive manufacture of boilers, tanks, &c., gives this company a heavy stock of punchings and clippings to draw upon for the cupola charge. To produce steel castings of high grade careful attention is given the sulphur and phosphorus limitations.

The converter, having a capacity of 2 tons, is of the standard Whiting type. It occupies a floor space 20 x 12 ft. and is separated from the remainder of the side bay by a steel curtain wall. It is carried on cast steel trunnions, which revolve in heavy cast iron standards, and spans a concrete pit into which the ladle is lowered to receive the finished steel, as shown in Fig. 1. A large hood is suspended above the converter to carry the fumes outside the building. The hight of the converter is 10 ft. when in blowing position. It is lined with a composition of ganister, sand and fireclay, rammed around a wood form. This lining, if repaired when necessary, will give at least 180 or 200 blows.

Iron from the cupola is poured into the converter, which is then turned to an upright position for blowing. The air pressure ranges from 3 to 5 lb. per square inch and is regulated by a valve at the operator's platform. The blowing operation requires from 15 to 20 min., varying with the percentage of metalloids in the iron. It is necessary that the time be as brief as possible, as upon the rapidity of the blow depends the temperature of the bath. Fig. 5 shows the converter during the progress of the blow. Reduction in the weight of metal is about 18 per cent. The steel comes from the converter at 1700 degrees C., a temperature insuring sufficient fluidity to yield sharp, sound castings of light section.

Back of the converter, and on a level with the foundry floor, is the blower room, which is equipped with a positive pressure blower for the converter and a steel pressure blower for the cupola. The positive pressure blower, built by the P. H. & F. M. Roots Company, Connersville, Ind., is a No. 5, belt connected to

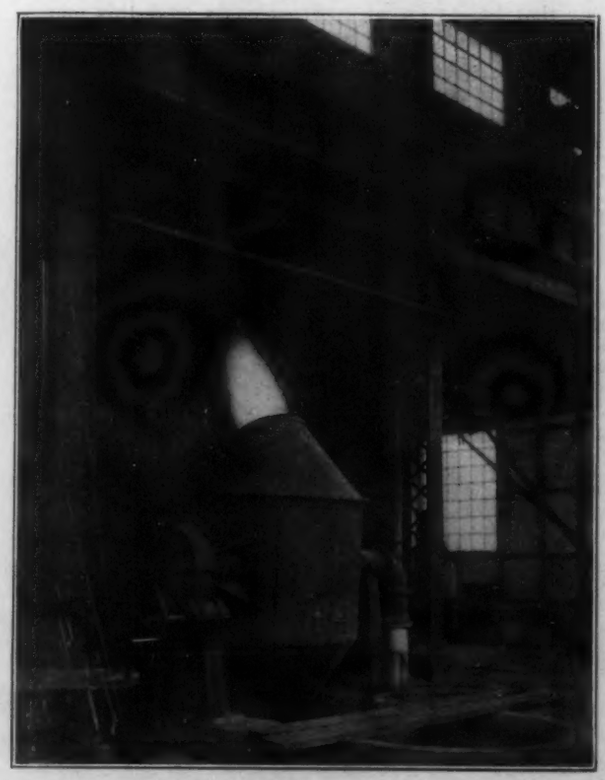


Fig. 4.—Charging the Converter.

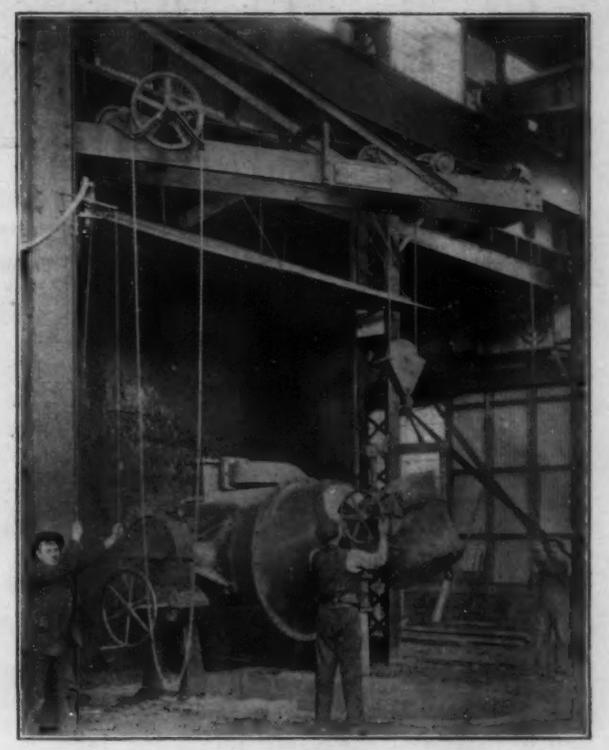


Fig. 5.—The Converter During a Blow.

a 75-hp. Allis-Chalmers Bullock alternating current motor. The steel pressure blower, built by the B. F. Sturtevant Company, Hyde Park, Mass., is a No. 6, belted to a 10-hp. Allis-Chalmers Bullock alternating current motor. The blast main to the converter is in a straight line to insure the minimum loss due to friction. A 14-in. blast pipe connects the cupola with the blower. The blast for the cupola is regulated by a standard blast gate.

The coreroom, core oven and mold drying oven are in the side bay, adjoining the cupola room, and cover an area 40 ft. long and 30 ft. wide. The mold drying oven, which holds two cars, is 18 ft. long and 10 ft. wide and is fitted with a Kinnear roller curtain door. The core oven is 10 x 10 ft., equipped with side shelves for cores, and has a swinging steel plate door. Coal is used for fuel.

Adjoining the core room is the sand mill room, with a 72-in. mill, built by the Vancouver Engineering Works, Ltd. This mill is of the undergeared type and is belt driven by a 25-hp. Allis-Chalmers Bullock alternating current motor. A pneumatic sand shaker, built by the Hanna Engineering Works, Chicago, is between the sand mill and core room.

The cleaning room adjoins the blower room and opens into the main bay. The equipment consists of a cold saw of the 2-B type and two power hand saws, built by the Quincy, Manchester, Sargent Company, Chicago. Two type C Diamond emery grinders, built by the Diamond Machine Company, Providence, R. I., provide ample facility for grinding the present output of the foundry. Provision has been made for the future installation of an annealing furnace.

The Vancouver Engineering Works, Ltd., manufacture an extensive line of logging and sawmill machinery, all types of boilers, burners for sawmills, and mining machinery.

At a meeting of stockholders of the Standard Gauge Steel Company and the Standard Connecting Rod Company, held in Beaver Falls, Pa., February 1, it was decided to consolidate the two concerns under the name of the Standard Gauge Steel Company. A new charter will be applied for and the capital stock will be increased. Officers of the consolidated company have not yet been elected.

INVENTIONS AND PATENT PROCEEDINGS.

How Inventions May Be and How They Should Be Protected.

BY A PATENT EXPERT.

A great deal of rather indiscriminating criticism has been directed against the United States patent system and the United States Patent Office. Doubtless fault lies somewhere either in the laws or their administration. In order that errors may be corrected it is necessary to locate them. For this purpose it may be well to recall the origin of our patent laws and then briefly consider how the inventor may be compensated for the labor, time and money expended in developing his invention and rendering the fruits of it available to the public. Such consideration might lead to the opinion that our system of patent privileges ought to be abandoned or modified or the administration of it improved.

Origin of United States Patent Law.

The United States Patent law, which provides for an absolute though limited monopoly of an invention, is based strictly upon the principles laid down in England in 1603 in Darcy *versus* Allin (Noy, 178)—the celebrated case of monopolies—and the English statute of monopolies (21 Jac. I, c. 3), passed in 1623, although the authority of Congress to enact such a law is derived from our constitution. The definition of a lawful monopoly, adopted by the judges in the case of monopolies, was this:

> Where any man by his own charge and industry, or by his own wit or invention, doth bring any new trade into the realm, or any engine tending to the furtherance of a trade, that never was used before, and that for the good of the realm; that in such cases the king may grant to him a monopoly patent for some reasonable time, until the subjects may learn the same, in consideration of the good that he doth bring to the commonwealth; otherwise not.

The fathers of the republic, and particularly Jefferson, were alive to the expediency of encouraging trade and manufactures. They appreciated thoroughly how England had advanced in wealth and power by such encouragement. The power to grant patents in England was a prerogative of the crown. Since in this country there was no crowned head whom the inherited common law could endow with this prerogative, it was thought wise to delegate to the Federal Congress the authority to pass laws "to promote the progress of science and the useful arts."

The study of ways and means by which a nation may support itself was inseparable from Jefferson's statecraft. How clearly he philosophized on the subject of patents as a means of promoting manufactures and trade appears in his published letters. It is most natural, therefore, that after the independence of the colonies had been secured and a constitution adopted he should apply his statesmanship to the subject, among others, of industrial encouragement. None knew better than he the history of monopolies in England and the dividing line between those that were vicious and those that were beneficent to the people.

On January 8, 1790, within one year after his inauguration, President Washington recommended to Congress legislation for promoting the progress of science and the useful arts in accordance with the constitutional provision. The President's recommendation was instigated by Jefferson. Annals of the time indicate that he drafted the bill, which, with minor changes, became a law on April 10, 1790. Mention is made in his writings of the great difficulty he experienced in so phrasing a certain section as to properly safeguard what he conceived to be the rights of the public and at the same time encourage the inventor. On June 27, 1790, writing of this law, he said: "The act of Congress authorizing the issue of patents for new discoveries has given a spring to invention beyond my conception."

The First Examination System and the First Examiners.

The law of 1790 established the first "examination system" of patents. It authorized the Secretary of State, the Secretary of War and the Attorney-General, "or any two of them," to grant patents for any such "useful art, manufacture, engine, machine, or device or any improvement thereon not before known or used, if they shall deem the same sufficiently useful and important." Accordingly Thomas Jefferson, Henry Knox and Edmund Randolph, who respectively held the offices designated, acted as the first patent examiners and during their terms of service granted about 50 patents.

The phrase "if they shall deem them sufficiently useful and important" seems to us, in the light of 120 years of judicial construction, an unfortunate one. It was popularly supposed to give the patent board arbitrary power of rejection for supposed insufficiency in degree of utility and importance, and hence to be a source of potential injustice to the inventor and a loss to the public, because of the impossibility of prejudging the degree of usefulness of an invention. But it must be remembered that there were few precedents extant except the English case of monopolies to guide the legislators, and that Jefferson's mind was reaching into the unknown when he phrased that act.

Notwithstanding the questionable phraseology of the law, it does not appear that the distinguished patent board of 1790 exercised any arbitrary power. On the contrary, the writings of Jefferson indicate that it established, with care, rules by which to test the presence or absence of invention in every case that came before it, all of which are now controlling in every court of law that has to do with patent cases. Of this matter he writes as follows:

> As a member of the patent board for several years while the law authorized a board to grant or refuse patents, I saw with what slow progress a system of general rules could be matured. Some, however, were established by that board. One of these was that a machine of which we were possessed might be applied by every man to any use of which it was susceptible, and that this right ought not to be taken from him and given to a monopolist, because the first had perhaps occasion to apply it. Thus, a screw for crushing plaster might be employed for crushing corn cobs, and a chain pump for raising water might be used for raising wheat, this being merely a change of application. Another rule was that a change of material should not give title to a patent, as the making of a plowshare of cast rather than of wrought iron, a comb of iron instead of horn or ivory, or the connecting buckets by a band of leather rather than of hemp or of iron. A third was that a mere change of form should give no right to a patent, as a high quartered shoe instead of a low one, a round hat instead of a three-square, or a square bucket instead of a round one. But for this rule all the changes of fashion in dress could have been under a tax of patents. These were among the rules which the uniform decisions of the board had already established.

Jefferson's Theory of Patent Privilege.

The patent act of 1790 was an outgrowth of Jefferson's study of the theory and history of property rights and was entirely consistent with his notions thereof. What those notions were with respect to monopolies of inventions is clearly set forth in one of his letters, as follows:

> Stable ownership is the gift of social law and it is given late in the progress of society. It would be curious, then, if an idea, the fugitive fermentation of an individual brain

could, of natural right, be claimed as exclusive and stable property. If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged it forces itself into the possession of everyone, and the receiver cannot dipossess himself of it. Its peculiar character, too, is that no one possesses the less, becausle every other possesses the whole of it. He who receives an idea from me receives instruction himself without lessening mine, as he who lights his taper at mine receives light without darkening me.

That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man and improvement of his condition, seems to be peculiarly and benevolently designed by nature when she made them, like fire, expansible over all space without lessening their density in any point, and, like the air in which we breathe, move and have our physical being, incapable of confinement and exclusive appropriation. Inventions, then, cannot in nature be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may possess utility, but this may or may not be done according to the will and convenience of society without claim or complaint from anybody.

In the philosophy of Jefferson, the only consideration for, as well as the sole justification of, a system of patent privileges was the benefit to society likely to arise therefrom. Consistently therewith, the act of 1790 gave equal privileges to all persons, citizens or aliens, requiring only such fees as would cover actual expenses and reasonable proof of novelty, utility and invention as a condition precedent to the grant. The average fee for obtaining a patent under that law was about $5.

The Registration System Tried for 43 Years.

In less than three years after its passage the law of 1790 was superseded by the act of February 21, 1793, which provided for the grant of patents as a matter of course, without examination, upon the filing of a sworn application therefor. In its essentials it was the antithesis of the preceding act. It discriminated against aliens, and otherwise violated the theory of patent privileges held by Jefferson, who grieved over the change, pointed out the consequences likely to result from neglecting the just relationship between society and the inventor, and urged that the abuses from frivolous and illegal patents sure to issue was "likely to cause more inconvenience than is countervailed by those really useful." This change is supposed to have been instigated by selfish interests that had become powerful by reason of patent grants, but were dissatisfied with the rejection of some applications by the patent board.

The registration law of 1793 remained in force 43 years. The pernicious monopolies and other evils that grew out of it finally aroused public protest that did not, however, gather sufficient strength until 1836 to secure legislative action. In that year a committee of Congress was appointed to investigate the patent law and the Patent Office. That committee reported in considerable detail the various evils it found to exist which Jefferson had predicted in general terms. Congress, therefore, repealed the registration law and substituted for it the law of 1836, providing for a return to the examination system, and of this act our present patent statutes are a development.

The statutes retained until 1870 the bad phraseology, "sufficiently useful and important," of the act of 1790, and for some years the discrimination against foreigners of the act of 1793, contrary to the Jeffersonian theory.

Should the theories of Jefferson regarding the protection of invention be modified or should the theory of artificial rewards for ingenuity be entirely abandoned?

No Natural Property Right in Invention.

There is no natural right of property in an invention. If one devises a new machine and makes one or more of them, the idea of natural justice developed by society makes those products of his ingenuity and labor his property to do with as he pleases, but does not prohibit others from inventing, making and using precisely similar machines. The actual invention always lies in the mental conception or idea, notwithstanding that, for various reasons, the law does not allow of a patent for the conception of idea, but only for the useful art or thing through which the idea is made available in the industrial arts.

If an abstract invention were property to which the inventor had a natural right, then society ought to protect the owner perpetually in the possession of it; the limitations of his ownership to a few years would be monstruous injustice. But the very nature of an idea renders it incapable of exclusive possession except as it may be retained in secret. When it is once divulged, it may be possessed by any one, nor does the originator possess any less because the receiver of it possesses the whole. It is, therefore, very different from a pair of shoes, for example, which cannot be property of both the giver and receiver. "He who receives an idea from me receives instruction himself without lessening mine, as he who lights his taper at mine receives light without darkening me,"

The inventor has a natural right to practice his invention in secret. Trade secrets were maintained in families during the Middle Ages, and descended from father to son. In the possession of such secrets persons were protected to a certain extent by law, and such is the case to-day. At the present time, however, it is much more difficult to practice inventions in concealment from the world than it was in the Middle Ages. No doubt there are still trade secrets, and the law reports cite many examples of effort to secretly use a machine or carry out a process. But it is very doubtful if at the present time any machine can be so used in successful and lucrative manufacture for any considerable period, even if it be possible to so utilize a process.

Only process inventions and those machines used in manufacturing are capable of secret use. All machines and articles made for sale are necessarily known to the world. The great difficulty in concealing from the public even those inventions capable of secret use, as well as the small proportion of them compared with the whole field of invention, renders this mode of getting his return unsatisfactory to the inventor. This concealment of inventions should clearly be discouraged on grounds of public policy. Arts of the early and Middle Ages have become lost through concealment, and the people derive no lasting benefits from secret inventions.

Advisability of Rewarding Inventions.

As there is no natural right of property in inventions, and as it is impossible in most cases to conceal the invention and at the same time derive benefit from it, it is clear that few inventors are altruistic enough to expend the labor and time, and few capitalists so benevolent as to invest the large sums of money frequently necessary to render a discovery available to the public, if the time and money so expended are to be lost to them, because others may come in and reap equally without equal expenditure. Political economists of every school have agreed in considering the encouragement of inventions by society essential to the highest economical development. Thus the world in general has come to approve the practice of offering to an inventor a reward or prize, provided he will fully disclose his invention and demonstrate its utility.

Two methods of rewarding ingenuity have been proposed and tried: 1. A money reward paid in a lump sum by the State, in consideration of which the inventor shall disclose and relinquish his invention. 2. An exclusive right to the use and profits of the invention for a limited period, in consideration of which the inventor shall fully disclose it.

The first of these methods may be equitable enough

in theory, but to most minds its impracticability is apparent. It has, however, been frequently advocated, and among others, by so able a man as Sir William Armstrong. It has been spasmodically tried at different times in different countries. It was the adopted system in France for a brief period during the first empire and proved a lamentable failure. It is not possible to determine in each case the money value of an invention nor to avoid the disputes and jealousies caused by such awards. The ingenuity or actual degree of invention displayed is not a measure of usefulness to the public. In fact, experience teaches that it is morally impossible to prejudge the pecuniary value of any invention.

Congress is without constitutional authority to establish a system of money rewards to inventors. Had, however, some of the amendments proposed to the Federal convention been adopted that power would have existed. One amendment proposed empowered Congress "to encourage, by proper premiums and provisions, the advancement of useful knowledge and discoveries"; another "to establish public institutions, rewards and immunities for the promotion of agriculture, commerce and manufactures."

The second method mentioned above for rewarding ingenuity is the only one authorized in our constitution, and is the one most approved and adopted wherever artificial reward is offered for invention. In fact, reason points to the grant of an exclusive right to the fruits of an invention as the only expedient form of reward. An exclusive right is peculiarly attractive to the inventor; the hazard and the boundless possibilities spur him as other rewards would not, while to the public its automaticity recommends it—he who does not wish to use need not pay. In the words of Bentham:

> It is an instance of a reward peculiarly adapted to the nature of the service, and adapts itself with the utmost nicety to those rules of proportion to which it is most difficult for reward artificially instituted by the Legislature to conform. If confined, as it ought to be, to the precise point in which the originality of the invention consists, it is conferred with the least possible waste of expense. It causes a service to be rendered which, without it, a man would not have a motive for rendering. . . . It is variable, equable, commensurable, characteristic, exemplary, frugal, promotive of perseverance, subservient to compensation, popular and reasonable.

An exclusive right to an invention is a monopoly of the most absolute type. Such a monopoly destroys and curtails the natural right of others and is defensible only on the ground of public policy. Experience has established the wisdom of such monopoly grants, under proper restrictions, when they are confined "to the precise point in which the originality of the invention consists." It is therefore highly essential to the welfare of the people that grants of patents be properly controlled by the people. Otherwise will follow annoying interference with individual rights and great waste of money in unproductive labor.

Two schemes for the creation and control of patent monopolies have been adopted, each designed to encourage and reward inventors and yet guard the public against pernicious monopolies. One of these is embodied in what is commonly known as the "registration system" and the other as the "examination system."

The Registration System.

Under the registration system a patent issues to the applicant as a matter of course after filing a full written description of the invention properly sworn to, and he takes the patent at his own hazard. *Prima facie* validity does not attach to it, and the courts must be depended on to establish its value. There may be modifications of and additions to this fundamental idea of the registration plan, such as the right of individuals to oppose the grant, a partial or complete search for anticipating references by the Patent Office without power to reject, and privilege of amending the patent to avoid annulment by the courts. Under such a system the agent of the people in executing the grant has ministerial duties only. To guard the public interests the fees are usually high, acting as deterrents and compensation by taxation for public loss in possible litigation; periodical taxes are sometimes imposed; licensing is enforced under penalty of repeal of the patent; and the patent is invalidated by the court when it is in litigation before it, if in any particular it claims more than the actual invention.

The tendency of such a system is to place burdens upon the meritorious inventor, checking the filing of applications by the poor, encouraging the secret practice of inventions, while at the same time affording opportunity for the unscrupulous to blackmail the public by invalid patents, which undoubtedly exists in spite of the theory of *caveat emptor* upon which such a system is based and of the various checks imposed.

The Examination System.

Under the examination system patents are not granted as matter of course, and at the peril of the applicants. An inventor must first make a sworn application containing a full disclosure of the invention and define in formal statements or claims the precise combination of steps or elements that he considers himself to have invented. The agent of the people, to make their bargain with the inventor, acts not merely in a ministerial and advisory capacity, but must make or cause to be made a thorough investigation into the novelty, utility and originality of the thing claimed, and must grant or refuse a patent in whole or in part in accordance with the result of his investigations. He has a most delicate duty to perform in behalf of the people, failure in which may impose serious expense and inconvenience.

Prima facie validity attaches to the patent, it having been granted only after examination by an officer peculiarly qualified by training and experience to pass upon the delicate and important questions presented. The public, by inspection of the clear and exact claims, is apprised of the extent of the restrictions it has consented to be bound by, and the patentee may with confidence solicit capital to engage in manufacture in order that he may reap his reward and speedily make available to the people the benefits of his discovery. No act originating after the grant, short of express abandonment or some extraordinary consideration of public policy, can defeat his right to the exclusive privilege. The fees are sufficient in theory only to defray the expense of examination, the sole consideration as well as the sole justification for the grant being the public good; hence, also, no discrimination is made against aliens. If, by inadvertence, a claim should be allowed to which a patentee is not lawfully entitled the court will not invalidate the entire patent submitted but only the particular portion of it that is found not to be of the patentee's invention.

The examination system is not in intent a system of class taxation. Burdensome restrictions are not placed upon inventors. The small expense encourages the poor man to give his ideas to the world; concealment of inventions is hardly worth while; the meritorious inventor has a property right with a good title which the would-be infringer and the investor will respect. It makes of the Patent Office a repository of industrial art and science that can have no superior, and it insures against lost arts. It stimulates to the best advantage the industries of a nation. It sets many intelligencies at work extracting knowledge from the nebulæ of ideas to increase the happiness of humanity.

The United States has had both systems. The originators of our patent laws believed the examination system the only one suited to a republican form of government and framed the law of 1790. In 1793 a registration law was passed, and in 1836 legislation was had providing for return to the examination system. As previously stated, the present laws are substantially the same as, and in accordance with, the theory of Jefferson.

A careful study of the two systems of exclusive

monopolies of inventions can hardly fail to show that in theory the examination system is most consistent with the public welfare. It has been so considered by the able minds who established it in the United States after careful consideration of the workings of both in actual practice, and it has been adopted by the philosophical German people after long study of the question.

The Necessity of Efficient Administration of Examination System.

So far as criticism is directed against the essentials of the law, it is without foundation. Most of that directed against the Patent Office will not bear analysis. Some of it is, however, justified. This just criticism of the Patent Office is due to the inadequate administration of the law. The business of the Patent Office is increasing with such rapidity that it is difficult for Congress to appreciate the necessity for supplying the Commissioner of Patents with the personnel, material and accommodations necessary to handle the business of the office efficiently. The inadequacy of the machinery to administer the law properly tends to reduce the examination system to a level with the registration system, but without the compensation of the latter. It is plain that if inventors may secure whatever they ask for, throwing the risk upon the public, the effect upon the welfare of the people will be more disastrous than if they secured it at their own risk and under a system of registration.

Very often the proposition is advanced to take from the Patent Office the power of rejection, giving to it merely advisory power, compelling a search and citation of references, but leaving the applicant to cancel or insist upon his claim as he sees fit. The advocates of this plan never suggest, however, throwing upon the patentee the risk of claiming more than his invention. They wish to leave that burden on the people, as it now is. This means a proposition to adopt a registration system without its checks. Such a system would annul the fundamental principles upon which a lawful system of special privileges can be built. If we are to change to a registration system we must adopt it with all its accompaniments, otherwise it is probable that the whole fabric would end in disaster.

It is characteristic of a bad law that the more strictly it is administered the worse are its effects, while of a good law the opposite is true. It can hardly be seriously maintained that a more accurate administration of the United States laws governing the grant of patents would result in greater injury to the people, for whose benefit the patent laws were enacted.

Some of the abuses in the administration of our patent system are: The long periods within which applications are sometimes retained pending in secrecy within the Patent Office; the expense and delays of interferences unnecessarily instituted; the allowance of patent monopolies substantially for results, instead of for the ways or means of attaining the results; the allowance of claims for means when the actual invention is a method; the abuse of reissues.

The ways by which inventions may be protected or rewarded have been pointed out. To the question, "How should inventions be protected?" it is answered: In the manner planned by Jefferson, and by a system of patent privileges administered and controlled as contemplated by the laws of the United States. But good laws must be well administered to give the people the benefit of them, and it would be well if discriminating criticism could be brought to bear effectively upon Congress to secure for the Patent Office, by a wise expenditude of the $7,000,000 excess fees paid into the Treasury by inventors, the machinery necessary to administer them efficiently.

The Caskey Swivel Joint Pneumatic Hose Coupling.

The Caskey Valve Company, 99 John street, New York, has added to its line of valves the patented Caskey swivel joint pneumatic hose coupling. This is a radical advance in couplings, warranted by the company to remain tight under all pressures.

The important characteristics of this device, which is made of brass, include, first, a perfect swivel joint which eliminates any tendency to the kinking of hose; second, tight joints under any and all pressures, thus preventing any leakage whatever, and, third, a one-eighth turn couples or uncouples it. The construction is such that there is no dependence on jamming to make the joint; the pressure does it all, and as the pressure is increased the packing becomes more effective. The point is made that as 1 hp. is required to compress 5 cu. ft. of free air to 100 lb., a small leak at each coupling under such pressure wastes in the aggregate many horsepower. A powerful spring keeps the coupling securely locked and jarring will not open it, which heretofore has been a common source of trouble in such devices. The joints are packed with leather and there are no gaskets used. The coupling gives the full area of the hose, there being no reduction in size of the interior. The couplings are made in ¼, ⅜, ½, ¾, 1 and 1¼ in. diameters.

Valves of this type of joint and principle of construction, technically known as Caskey compressed air valves, are also made. They were originally designed for hydraulic use, but are capable of withstanding air pressures up to 10,000 lb. per square inch, and are equally effective under low or high pressures. Air valves of this description are made of manganese bronze in sizes from ¼ to 3 in.

Swivel Joint Pneumatic Hose Coupling Made by the Caskey Valve Company, 99 John Street, New York.

Reinforced Concrete Ties.

According to the *Railroad Age Gazette*, the reinforced concrete ties designed by L. J. Riegler, Pittsburgh, Pa., and placed about two years ago in a section of track on the Pennsylvania Lines West carrying heavy high speed traffic do not show signs of deterioration. A ⅜-in. steel casing on the sides of the tie with a lap approximately 1½ in. on the top and on the bottom and eight strips punched out and turned into the concrete serve to hold it in position, while three flat strips across the top and the same number across the bottom are bolted to the sides to prevent spreading. Two longitudinal 1¼-in. rods, one near the top and the other near the bottom, provide the necessary reinforcement. The rails rest on and are fastened to tie plates with two 1-in. bolts on each side of the base, the head bearing on the plates inside of recesses on the bottom. To insulate the rails the overlap of the metal sides is sheared off and bent into the tie at the tie plates. These ties are 7 in. thick, 1 ft. wide and 8½ ft. long. This large bearing area results in a saving of ties, as 15 of them take the place of 18 standard wooden ones, and the downward thrust is distributed over a short distance on each side of the tie by rounding the side slightly.

The Kelly High Pressure Sand Blast.

Sand blast devices have been in more or less successful use for 40 years, the first having been patented in 1870. Chiefly they are employed for cleaning stone buildings and soft iron castings, and also for removing paint and light rust from metal structures, but for the last class of work they have not been very successful because of the low pressure used, less than 50 lb. High pressures were prohibitive for this work, as the air and sand came through the same tube, and the force of the particles of the latter impigning on the inner surface of the nozzle soon eroded it.

In the Kelly high pressure sand blast made by the High Pressure Sand Blast Company, New York City, these objections have been overcome by the use of a special type of nozzle and separate lines of hose for the sand and the compressed air. This machine, it is stated, will operate at and steadily maintain any reasonable pressure, but the best results are obtained by employing a pressure of about 100 lb. per square inch. It is this radical difference in the construction of the nozzle, as compared with that of other sand blast machines now on the market which have only a single hose that makes the higher pressures practicable.

Fig. 1 shows the paint and rust being removed from a steel door by one of these machines. The two light rectangular patches are where the blast has cleared the surface down to the gray metal, and the small circular light spot marks where the sand is working at the instant the photograph was taken. Fig. 2 is a sectional view of the Kelly high pressure sand blast apparatus, and Fig. 3 illustrates the special patented nozzle used. Among the important applications of the sand blast are cleaning scale from structural steel, removing sand and scale from all kinds of castings, cleaning rust and old paint from iron and steel bridges preparatory to repainting, preparing the surfaces of steel cars for painting, removing barnacles from ship bottoms and incrustations from the interior of the hold, cleaning vacuum pans in sugar factories, and removing scale from boiler tubes. Some of this work is now done by hand or by pneumatic chisels, usually at much greater expense and less effectively.

Tests made with this apparatus on different classes of work have given the following results: When used to remove paint from steel passenger cars, 16 sq. yd. have been cleaned in 1 hour; at a large oil refinery one Kelly machine cleaned an average of 54 sq. yd. of surface of acid tanks in a day and has replaced 32 men; the record for cleaning the bottom of an iron steamship was 40 sq. yd. per day, as against 13 men with hand chisels. In the last instance, aside from the saving of labor, the work, it is stated, was much more thorough as the chipping hammers could not remove paint and rust from around rivet heads and pit holes, while it was almost impossible for them to get behind stringers, keelsons, &c. In foundries the sand blast will remove crust from gear castings in about half the time that it takes pneumatic hammers to do the work; while at a test made on a marine boiler covered with

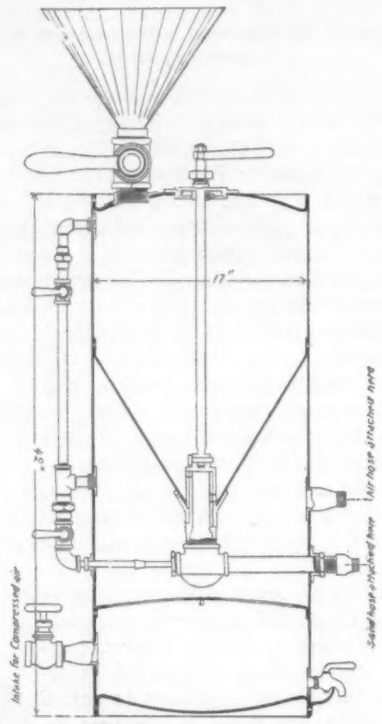


Fig. 2.—Sectional Elevation of the Sand Blast Tank.

Fig. 1.—Cleaning a Steel Door with the Kelly Sand Blast.

very hard lime scale, the blast cleaned the iron at the rate of a square foot per minute.

The apparatus illustrated in section in Fig. 2 is made of No. 10 gauge galvanized iron with riveted and soldered seams, tested to withstand an air pressure of 300 lb. Clean, sharp sand which has been carefully screened through a No. 10 mesh sieve is poured through the funnel in the top of the machine until the sand tank of 300 lb. capacity is filled. The bottom of the tank is provided with sloping sides to direct the sand into the pipe to which the sand hose is attached.

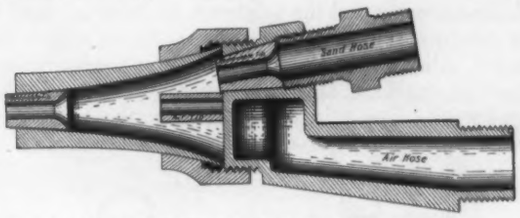


Fig. 3.—Cross Section of the Kelly Sand Blast Nozzle.

Air is admitted under a pressure of about 100 lb. from the compressor near the bottom of the machine, and passes off through the air hose outlet higher up on the opposite side of the tank.

The compressed air is carried through a 1-in. hose from the machine to the nozzle where it is accelerated to a high velocity by passing through an orifice 3-16 in. in diameter. This hose is not subject to any wear, and will stand an air pressure of 150 lb. A ¾-in. hose is employed to convey the sand from the sand tank to the nozzle. This hose takes a mixture of sand and air at a low velocity, and feeds it into the high velocity jet, and the combined jets of sand and air then pass out through the ¼-in. orifice at the end of the nozzle at a comparatively high velocity.

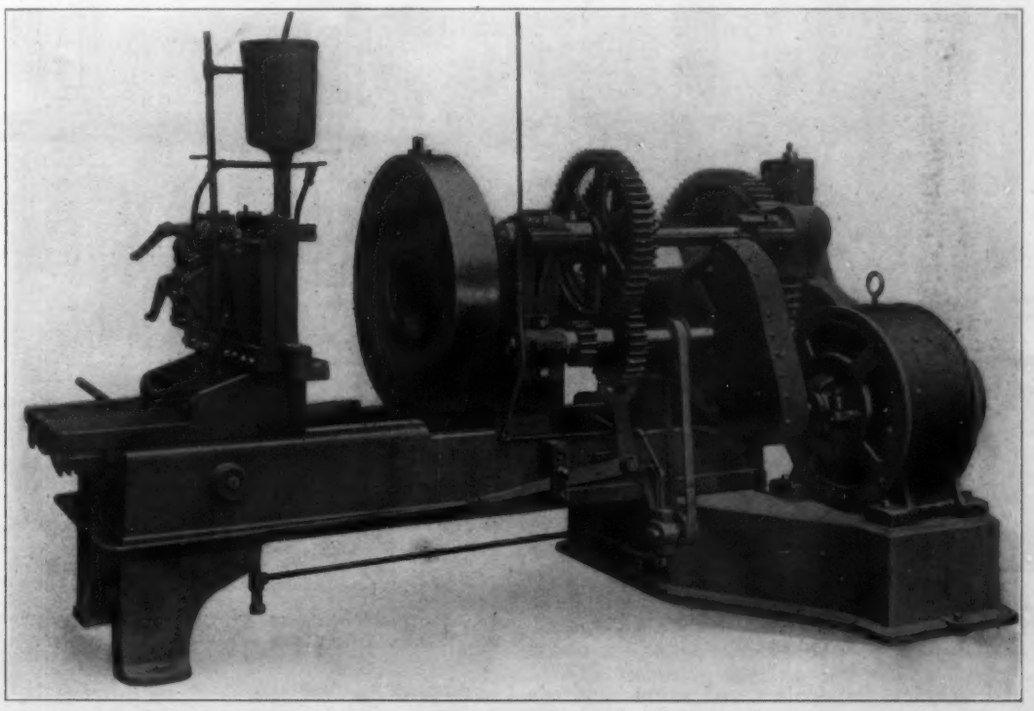
Removable tips are used where the nozzle is most exposed to wear—that is, at the orifice at the end of the sand hose and the opening at the end of the nozzle where the combined jet of sand and air passes out. The cost of these tips is very slight, and when worn out they can be easily and quickly replaced.

It is almost impossible to operate the ordinary type of sand blast with air containing much moisture, but it is stated that the presence of water in the compressed air does not interfere with the effective working of the Kelly high pressure sand blast. While the blast can be operated by compressed air under any pressure from 15 to 150 lb., according to the class of work to be done, the best pressure for cleaning iron and steel work is from 90 to 100 lb. At the latter pressure about 70 cu. ft. of free air is used per minute, which is claimed to be approximately 60 per cent. of the quantity used by other machines. It is also very economical as regards the consumption of sand, it being stated that the average daily consumption is about 1 1-3 tons per day, while low pressure machines use from three to six times as much. The cost of operation and maintenance is stated to be 20 cents per day.

A Large Cox Motor Driven Pipe Threader.

Individual drive from a variable speed motor has its advantages in many machine tool operations where economy and rapid production are important factors. Speed variation secured by cone pulleys or gears is by steps of comparatively large changes in speed. On the other hand, the adjustable speed motor makes possible fine gradations and a substantially continuous range, enabling a tool to be worked always at the proper speed to give the best results. Often the avoidance of expensive and cumbersome speed changing apparatus, following the use of the adjustable speed motor, has resulted in reducing the cost of the tool taken complete with its motor, aside from the items of increased convenience and improved operation.

The accompanying illustration shows a Westinghouse type SA adjustable speed direct current motor with a speed variation ratio of one to four, driving a machine for cutting and threading pipe from 2½ to 8 in. in diameter, built by the Cox & Sons Company, Philadelphia, Pa. These machines are designed in sizes to handle pipes up to 18 in. internal diameter, and the special motor drive supplied has proved especially satisfactory. Where quick changes in speed may be required, as in small shops handling a number of different sizes of pipe, such changes can be most easily made with the adjustable speed drive, saving the time lost in shifting gears or belts and bringing the machine promptly to its most efficient cutting rate. As seen from the illustration, the pipe threader is provided with one set of gear changes, and has an oil system which keeps the cutting tool well flooded with oil. The types of tool holders mounted on the movable carriage are of an improved design for this class of work.



An 8-In. Pipe Threading Machine Built by the Cox & Sons Company, Philadelphia, Pa., Driven by a Westinghouse Adjustable Speed Motor.

Weber Reinforced Concrete Chimneys.

The reinforced concrete chimney has been one of the many important developments in that class of construction within the past few years. While concrete chimneys are not new, some having been built a considerable time ago, it is only within the last decade that the use of reinforced concrete has been a matter of interest throughout the country. This was due to the fact that the few concrete chimneys built a long time ago were not a commercial success, since the cost was so much higher than for chimneys constructed of brick or other material as to be prohibitory.

The concrete chimney perfected to overcome this cost question has proved successful from both commercial and technical standpoints, and many hundreds of these chimneys have been built throughout the United States, Canada, Mexico, Cuba, Porto Rico and many European countries. Such chimneys, as built extensively by the Weber Chimney Company, Chicago, Ill., are of the cylindrical type, consisting of an inner and an outer shell for the lower third of the hight and of a single wall from that point to the top with an expansion joint where the single shell part commences. In the lower part of the chimney, between the two walls, is a 4-in. circular air space, which permits expansion and contraction in every direction to shield the outer wall from the direct action of the heat within the chimney. The outer wall in turn protects the inner shell from the weather and outside temperatures, thus preventing sudden cooling of the interior, and also resists the bending forces caused by wind pressure. The walls are reinforced with vertical bars of steel, ¾-in. round bars being frequently used for this purpose, and also with horizontal circular rings, these being ⅝-in. round bars, as a general rule. The walls of this cylindrical type of chimney are straight and the chimney requires only a little more space at the base than at the top, which is of considerable advantage in most modern power plants where space is an important factor.

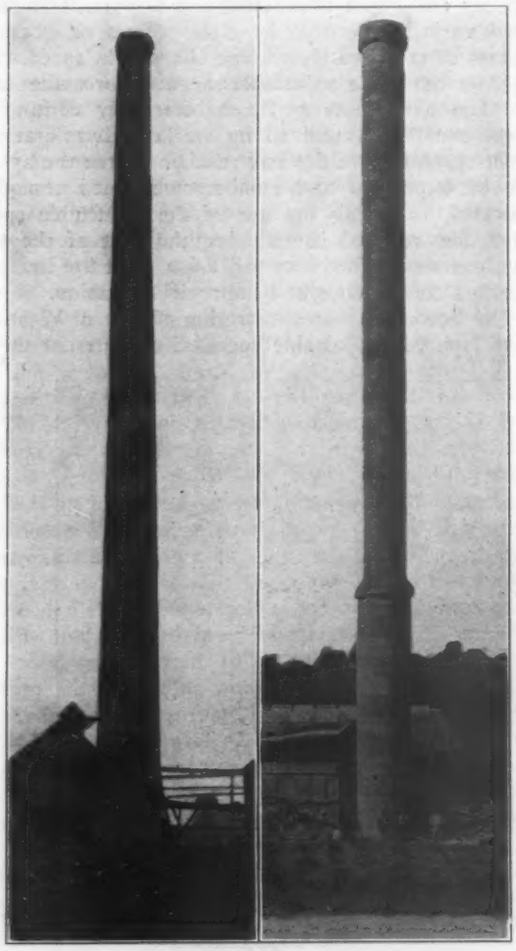


Fig. 1. Fig. 2.

Reinforced Concrete Chimneys Built by the Weber Chimney Company, Chicago, Ill.

The Coniform concrete chimney is another type now built extensively by the same company. This is so named because it is built in the form of a true frustum of a cone; it is circular and its wall is of uniform thickness at any given cross section throughout, and the diameter and the thickness of the wall decrease in a uniform ratio from the base to the top. This type of chimney is generally reinforced with vertical bars of ¾-in. round steel and horizontal rings of ½-in. round steel. The reinforcing bars in the wall of the chimney extend down into the foundation and are embedded beneath the steel reinforcing bars in the foundation, which are also ¾-in. round steel. The Coniform chimney has a lining of firebrick or reinforced concrete for usually about one-third the total hight of the chimney, but this varies with the purpose for which it was constructed. In building the Coniform chimney the Weber unit forms are employed. These forms consist of a series of wooden units held together in the form of a true circle, but at the same time retaining the principle of flexibility, so that the diameter of the chimney and the thickness of the wall may be properly reduced in uniform ratio by removing the necessary units from the form at regular intervals.

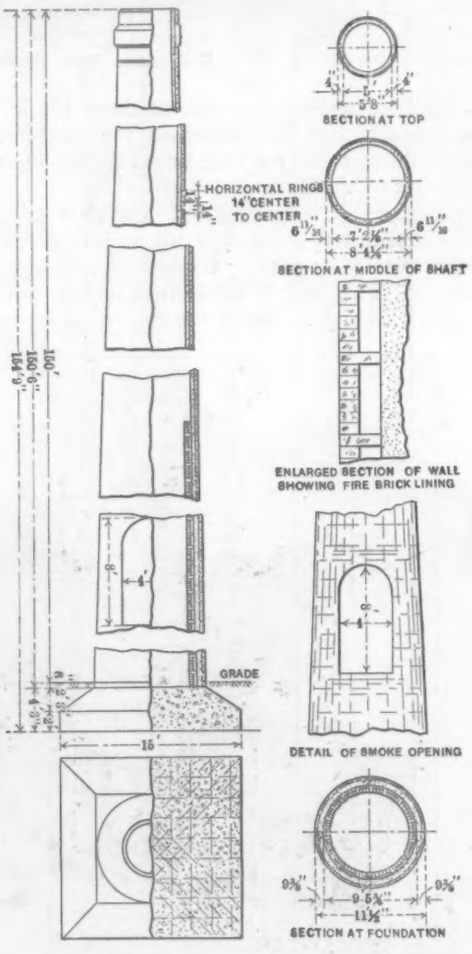

SECTION AT TOP
HORIZONTAL RINGS 14" CENTER TO CENTER
SECTION AT MIDDLE OF SHAFT
ENLARGED SECTION OF WALL SHOWING FIRE BRICK LINING
GRADE
DETAIL OF SMOKE OPENING
SECTION AT FOUNDATION

Fig. 3.—Details of the 150-Ft. Coniform Chimney Shown in Fig. 1, Erected for A. Davis & Son, Ltd., Kingston, Ontario.

One of these chimneys, 150 ft. high and 5 ft. inside diameter at the top, recently completed in about 50 working days for A. Davis & Son, Ltd., Kingston, Ontario, is shown in Figs. 1 and 3. This chimney is built upon solid rock, with a foundation 15 ft. square. The largest outside diameter of the chimney, at the base

of the shaft, is 11 ft. ½ in., and the thickness of wall at the same point is 9⅜ in. The thickness of the wall at the top is 4 in. Firebrick was employed to line the lowest 50 ft. Owing to the successful use of the wooden forms previously mentioned it is stated that it was possible to finish the surface of the chimney in natural concrete, doing away with any necessity for plastering or washing, such as is frequently done in many kinds of reinforced concrete work. The taper of the wall is 1 in 56, which is that usually employed in building common brick chimneys.

The vertical reinforcement of this chimney is of 1¼ x 1¼ x 3-16 in. steel tees, so distributed as to take up all the tension caused by the wind pressure. These tees are arranged in five sections, with different numbers of bars in each. From the bottom up, the number of bars and the lengths of the various divisions

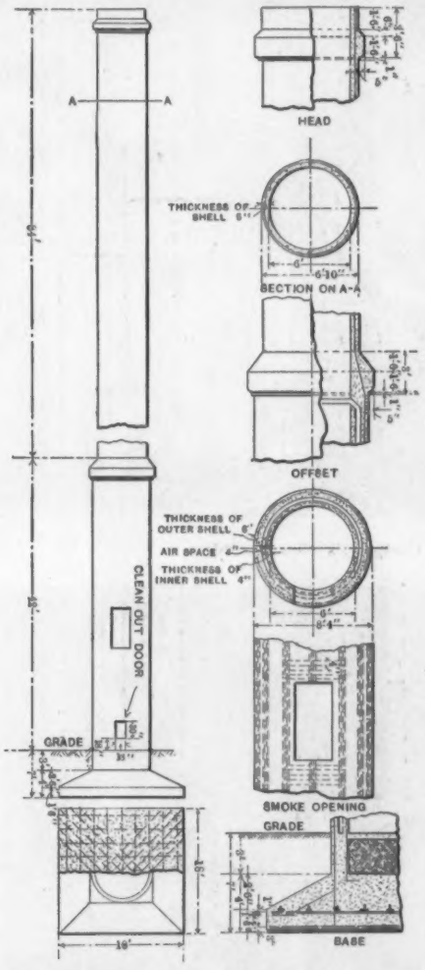


Fig. 4.—Details of the 125-Ft. Cylindrical Chimney Shown in Fig. 2, Erected for the William Rock Flower Company, Kansas City, Mo.

are: 40 bars, 14 ft. 6 in.; 32 bars, 21 ft.; 24 bars, 28 ft.; 16 bars, 35 ft., and 8 bars, 56 ft. The horizontal reinforcement consists of rings of ½-in. round steel, spaced 14 in. center to center, and placed outside of the tees to keep them from spreading. This is supplemented in the vicinity of the smoke opening by two extra rings above and three below, whose location is shown in the enlarged detail in Fig. 3.

A Weber cylindrical concrete chimney erected for the William Rock Flower Company at Kansas City, Mo., that is 125 ft. high and 6 ft. inside diameter at the top, is illustrated in Figs. 2 and 4. This chimney rests on a reinforced concrete foundation 18 ft. square and in the lower part has an outer wall 6 in. thick separated by a 4-in. air space from the inner shell of the same thickness. The air space and the inner shell extend as far as the offset. Above there is no air space and the wall is 5 in. thick. The vertical reinforcement in the chimney wall and that in the foundation is composed of 1¼ x 1¼ x 3-16 in. tees. Like the other chimney, the vertical reinforcing bars are grouped in five divisions of varying lengths and different numbers of bars. Beginning at the top, there are in order 12 bars, 40 ft. long; 24 bars, 25 ft.; 36 bars, 25 ft.; 48 bars, 23 ft., and 60 bars, 20 ft.

The Tarrant Foundry Company's New Plant.

The Tarrant Foundry Company, for the last 26 years located at Indiana and Kingsbury streets, Chicago, has purchased a site 141 x 309 ft. at the northeast corner of Seventeenth and Robey streets, which it will improve at once by the erection of modern foundry buildings at a cost of about $100,000. Plans for these buildings have been prepared by Raeder & Wood, architects and engineers, Great Northern Building, Chicago.

The main building will be 141 x 200 ft., of steel, brick and concrete construction, with two side bays, one of which will be 45 ft. and the other 28 ft. The central part will be served with a [illegible] ft. 5 in. crane of 15 tons capacity, and the bays will have cranes of 5 and 10 tons capacity. The railroad on which the new plant is located is elevated, and cars will be unloaded from a 270-ft. elevated side track directly to the stockrooms. The cupola charging floor will be of concrete and will be 32 x 110 ft., having a capacity of 2000 lb. per square foot of floor load. This charging floor will be at car hight, and will have 11 rolling steel doors on the track side. There will be two core ovens, one of which will be 7 x 18 ft. and the other 9 x 18 ft.; one molding dry oven, 15 x 27 ft., and two cupolas, 66 in. and 84 in., respectively. The yard will be served with a craneway which will extend over the track elevation, with a crane of 15 tons capacity, having a span of 55 ft. 8 in. There will be two cleaning rooms, one of which will be 30 x 55 ft. and the other 16 x 16 ft.; a three-story pattern and office building of reinforced concrete, 50 x 56 ft., and a reinforced concrete stable with concrete mangers. All raw material used in the plant will be unloaded from cars directly to the charging floor.

Part of the equipment now in use at the present plant of the company will be installed at the new works, but a large cupola, two large cranes and other general equipment will be purchased and installed in the new plant. The motive power will be alternating current from public service lines, and this will necessitate the purchase of a large number of motors. Information regarding equipment to be purchased can be secured from Raeder & Wood, architects and engineers in charge.

Wire Fencing Machine Litigation.—The Denning Wire & Fence Company, Cedar Rapids, Iowa, through a decision rendered in the United States District Court for the Northern District of Iowa, is now free to go forward with its plans for the erection of a larger factory. The company some time ago was obliged to discontinue the manufacture of wire fencing, as an injunction suit brought by the American Steel & Wire Company was decided in the latter's favor, it having been found that the machines then used were infringing on the Bates machine. President J. M. Denning then brought out a new machine constructed on a different principle. The new machine was also attacked, but the decision just made holds that the new machine is not in any sense an infringement on the Bates patents. The Denning Wire & Fence Company has no definite plans to give out for publication at this time, but the expectation is that the plant will be greatly enlarged in the near future.

The United States Steel Corporation is making preliminary arrangements for opening its limestone quarries near Stinesville, Ind., to supply its furnaces at Gary and South Chicago. Two years ago the cor-

poration bought over 500 acres of land there, underlaid with 60 to 80 ft. of a high quality of limestone. A crushing plant is to be erected. The main building will be 100 ft. square and 85 ft. high, and will be built of steel. The crushing capacity of each machine will be about 20 cars a day, and five crushers will be required. Preliminary surveys have been made for two railroads from the plant, one to connect with the Vandalia, 4 miles away, and the other with the Monon, ½ mile distant.

The Carnegie Steel Company has placed an order with the Morgan Engineering Company, Alliance, Ohio, for five cranes to be installed in the new Carnegie warehouse now being built on Twelfth street, Pittsburgh, on the site formerly occupied by the Star Tin Plate Company. It is probable that additional cranes for this warehouse will be ordered.

The Otis Elevator Company's Two-Story Iron Foundry at Yonkers, N. Y.

In the latter part of 1908 the Otis Elevator Company decided to replace its one-story gray iron foundry at Yonkers, N. Y., with a larger modern structure embodying the latest practice in foundry construction.

Fig. 1.—View on First Floor of Otis Elevator Company's New Foundry.

Fig. 2.—Brass Foundry on Second Floor of Main Building.

The contract for designing and superintending the work was placed with John W. Seaver, Cleveland, Ohio. Owing to the limited space available at the plant it was decided to make the new foundry two stories, the lower floor to be arranged for the manufacture of heavy castings and the upper floor for light castings. Views of the two floors are given in Figs. 1 and 2.

The building was made in the form of an L, as shown in Fig. 3. The wing of the L is provided with

four floors. (Fig 4.) The lower floor is the basement, in which are located bins for storing sand and coke. The second floor, a mezzanine for the main floor, is arranged for the chipping and rough finishing of the castings and on it are placed the tumbling barrels. A second mezzanine floor, Figs. 4 and 6, is built above this finishing floor, part of it being entirely inclosed and used for a carpenter shop for the manufacture of flasks, while the remainder is arranged for a charging platform for the cupolas of the first floor. The upper floor of the L is an extension of the second floor molding space. Over this is the charging platform for the upper cupolas. This L is in connection with the yard of the plant and all material is handled to and from the foundry through doors on the first mezzanine or chipping room floor. Two elevators were placed in this wing, one being a hydraulic elevator for handling the stock to the two charging platforms for the cupolas, and the second an electric elevator for handling castings, sand and other supplies. The main portion of the upper molding floor, Figs. 2 and 5, is arranged with two lines of crane runways, the cranes on which have a capacity of 3 tons. The lower molding floor is provided with one runway, on which is a 10-ton crane with 2½-ton auxiliary hoist. For handling flasks and for other lifting all the columns on this lower molding floor are furnished with pintels for carrying portable jib cranes. The cranes are of two types, one being a 5-ton electrically operated crane and the other a 3-ton hand operated crane. For handling rough castings to the chipping floor two cranes are provided traveling on tracks extending over the molding floor and running back throughout the width of the finishing floor. These cranes are of 10 tons capacity and are electrically operated. The lower main floor is provided with two cupolas, 78 in. outside diameter of shell, and the upper floor with a cupola of 60 in. outside diameter of shell. Blast is furnished by electrically driven positive blowers placed on a platform forming an extension to the charging platform.

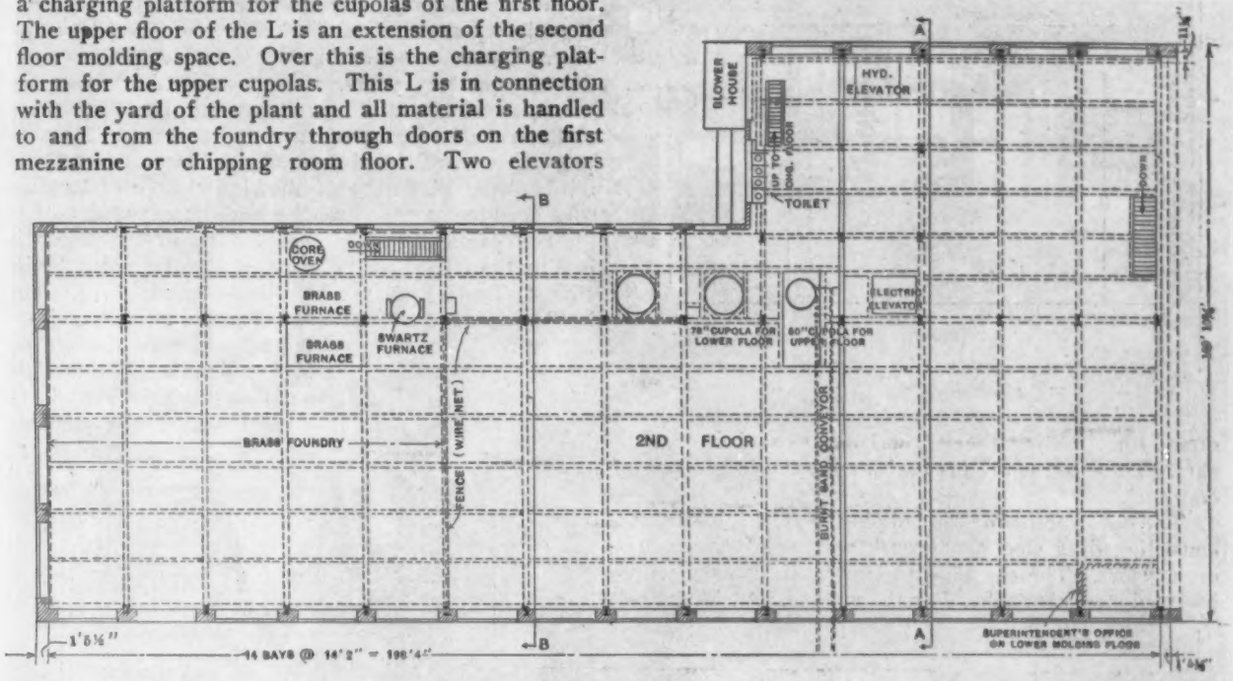


Fig. 3.—Plan of Second Floor of Main Foundry.

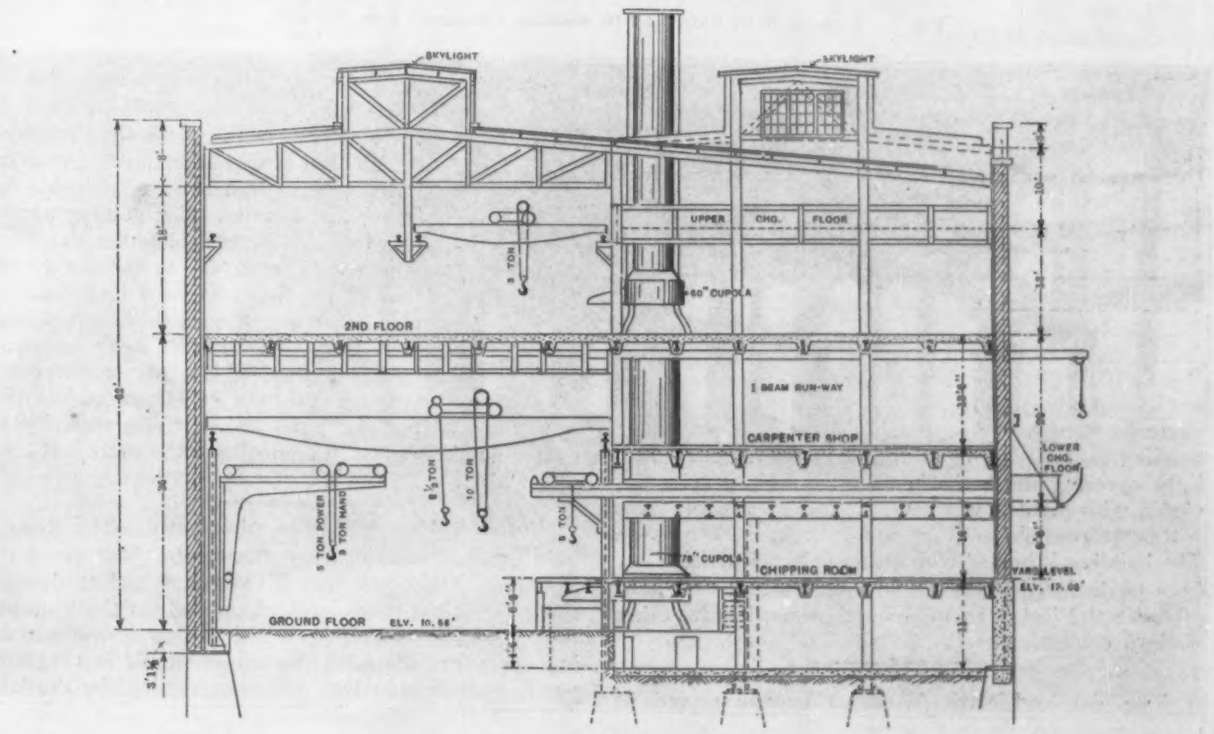


Fig. 4.—Section A-A in Fig. 3.

The brass foundry on the upper floor is equipped with a Schwartz furnace. On the main floor, Fig. 7, are two 10 x 15 ft. core ovens and two bureau ovens. The large ovens are provided with a hand operated jib

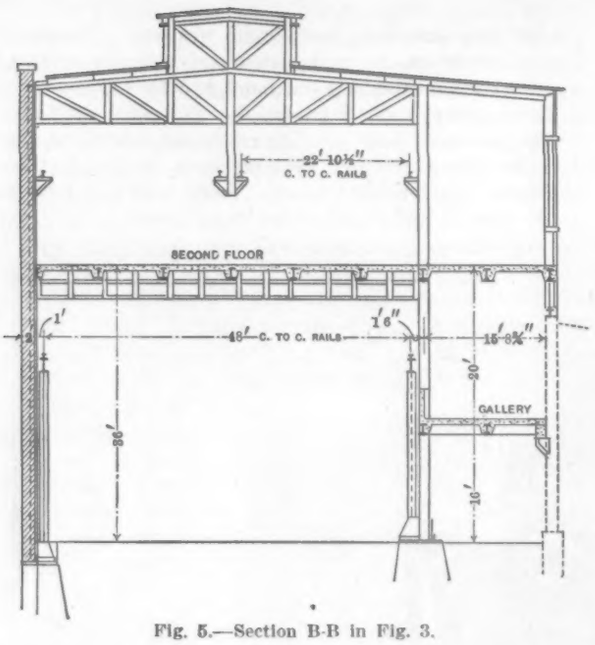


Fig. 5.—Section B-B in Fig. 3.

crane for handling the larger cores to and from the cars. These ovens are fired with coke and have rolling doors.

The construction of the building is very substantial, consisting of a steel framework with reinforced concrete floors. The charging platforms are floored with inverted steel channels. For the roof ferroinclave was used, properly waterproofed. All gutters and conductors are of heavy copper. The roof has a monitor running the full length of the main floor, with a skylight covering the entire monitor, the sides being inclosed with pivoted windows. Windows are provided wherever possible so that ample light is furnished. The building is heated with steam coils. Provision has been made for the comfort of employees in the shape of toilet and locker rooms with showers, besides other modern conveniences.

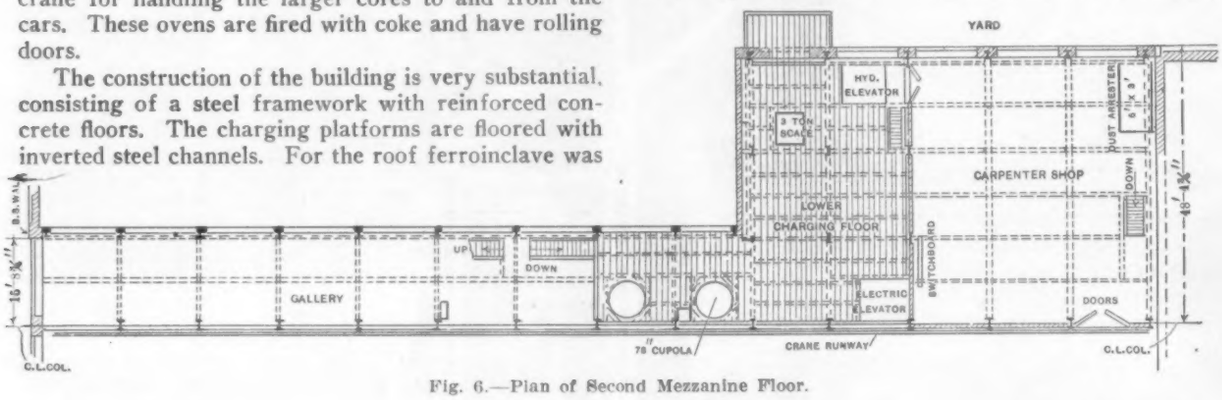


Fig. 6.—Plan of Second Mezzanine Floor.

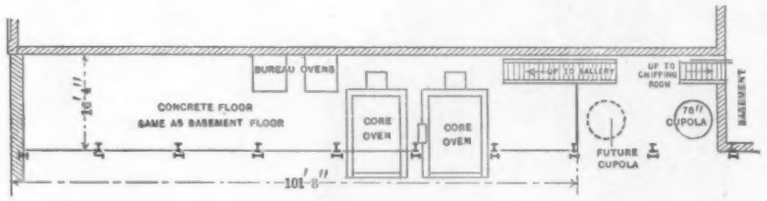


Fig. 7.—Plan of Core Room, Ground Floor.

The Toledo Electric Welder Company moved its offices from Toledo to Cincinnati February 4, and is now located in its new factory building at Knowlton and Langland streets, Northside, Cincinnati, Ohio. The factory is fully equipped with the best and most modern tools necessary for the building of the company's line of welding machines, and the entire plant is motor driven. A 75-kw. single phase A. C. generator supplies the power for testing the welding machines up to their full rated capacity. The shops are lighted by a motor-driven D. C. generator, and the new mercury lights are largely in evidence throughout the shop. Neil Macneale, the president of the company, states that owing to the number of orders received during the month of January it will be necessary to put on a night force at once to take care of them and make the deliveries promised.

Wooden Block Flooring.

The article on wooden block flooring published in *The Iron Age* of January 27 has drawn out a communication from Joseph Broome, industrial engineer, 123 Liberty street, New York City, referring to a different type of wooden block floor which he has used for the past 15 years. He has found it most advantageous for machine shops and the like, especially when laid on 9 to 12 in. of concrete. It saves the cost of individual foundations for machines and also has the advantage of allowing change of location of a machine at any time, and without expense.

The particular floor referred to in the letter is one that was laid in the plant of the American Swiss File & Tool Company, at Elizabethport, N. J. The blocks are of untreated wood, 8 x 4 x 2½ in., and are laid directly on the concrete floor construction on edge, with sand grouted broken joints. The method of installing machines on a floor of this kind is to drive expansion bolts into the blocks if the machine is a small one or to cut a hole in the floor of sufficient size to accommodate wooden string pieces where the machine is larger and heavier. For gaining access to wires and pipes laid under the floor it is simply necessary to remove a section of the floor over the duct and replace it when the work is completed. The first cost of this type of floor is approximately 10 per cent. more than the ordinary type of mill construction, but the subsequent saving in repairs and patching around machine foundations more than offsets the increased cost of installation.

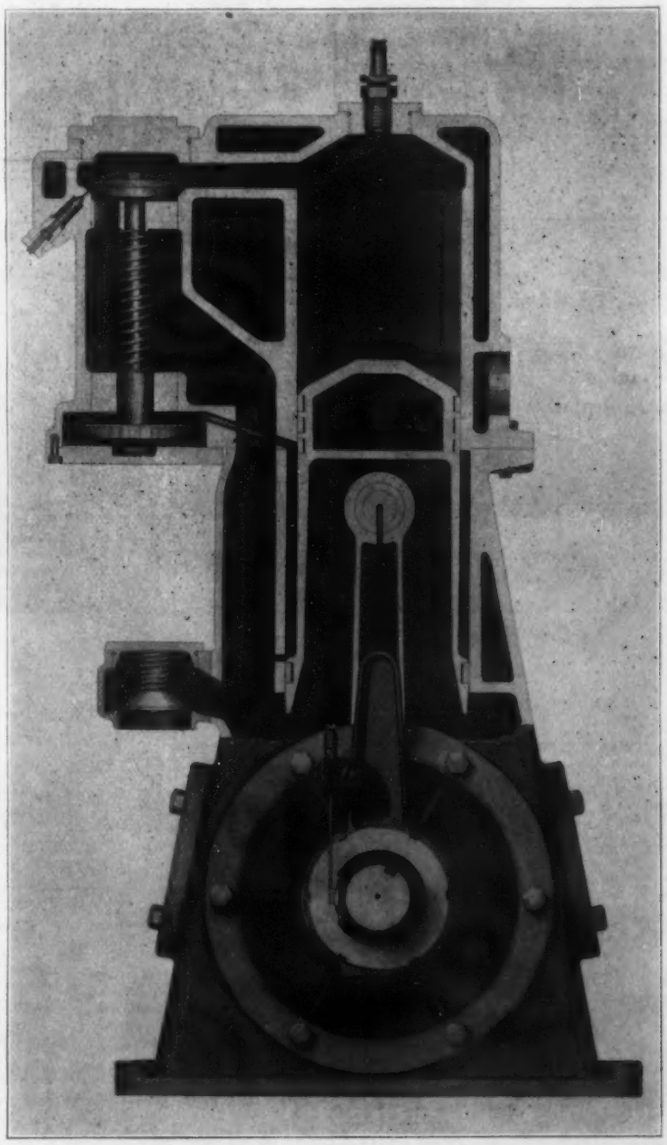
Corns Rolling Mill to be Abandoned.—The Republic Iron & Steel Company expects to close down its Massillon, Ohio, rolling mill March 1 and to discontinue operations there. Additions made at the Youngstown, Ohio, mills have been with a view to concentrating operations there. This mill was built in 1873 and put in operation in 1875. It was acquired by the late Joseph Corns, who with his son, James C. Corns, operated it for many years under the firm name of Joseph Corns & Son. It was acquired by the Republic Iron & Steel Company, and has been known as the Corns' mill, its product being iron for agricultural implements and special shapes to pattern.

The Page Woven Wire Fence Company, Monessen, Pa., has completed and put in operation its second 60-ton open hearth furnace, which insures to the company its own supply of billets. It is making plans for the erection of a warehouse, 200 x 200 ft., as well as some other minor improvements.

The Shortt Internal Combustion Engine.

Distinctive as features of the Shortt internal combustion engine, manufactured by the W. M. Ryan Company, 314 South Canal street, Chicago, Ill., are the absence of a carburetor and valve gears to regulate the fuel supply and a positive system of lubrication.

Some idea of the construction of the engine can be gathered from the accompanying illustration. The piston is long and is smaller in diameter at the head end than at the bottom, and the upper part of the cylinder is narrower than the lower half. Assuming the piston to be at the opposite end of its stroke from that shown, and just starting on its down stroke the air which has been drawn by the upstroke of the piston in through the air inlet valve located on the side of the crank case will be compressed. When the main valve to the cylinder opens the pressure in the crank case has risen to about 4 lb. per square inch, and this pressure forces fuel from the fuel tank to the main valve. In this way atmospheric changes, it is stated, do not affect the operation of the engine, as might be the case if a carburetor was employed and fuel and air were drawn into the combustion chamber by suction instead of being forced in by pressure.



The Shortt Two-Cycle Gasoline Engine Made by the W. M. Ryan Company, Chicago, Ill.

As the piston moves downward there is a space between the guiding walls for the larger end of the piston. In this way a vacuum is created that is communicated to one of the two chambers shown in the upper left corner of the illustration. This chamber contains a small piston fastened to the lower end of the main valve. After a time this vacuum causes the valve to rise and admits the scavenging charge of air which forces the residue of burned gas through the exhaust ports. As soon as sufficient air has passed through the main valve to reduce the air pressure below that to which the fuel is subjected, the fuel passes through until enough for a charge is admitted when the main valve closes automatically. As the downstroke is completed, air is admitted to the small vacuum space. This admission of air to the vacuum space is practically simultaneous with the admission of the fuel charge. This opening and closing of the main valve is dependent upon the speed of the main piston and is automatic in its action, governing the supply of air and fuel accurately under all conditions of speed and load.

The scavenging of the cylinders by a charge of air introduced ahead of the gaseous charge is admitted to be very desirable, and when properly performed in a two-cycle engine, makes that superior to any other. In most engines this is accomplished by the use of gears and pumps which complicate the mechanism of the larger sizes and are almost impossible in the small. The Shortt engine accomplishes the same result by the use of differential pressures with only one inlet valve.

The cylinder and valve chest are made of one casting of close grained, well annealed, hard, gray iron with the cylinder head cast integral with the cylinder. In this way the chance of leaks through joints is minimized. The entire casting is bored, faced and reamed at one setting. The crank case fits around a projection on the lower face of the cylinder. The cylinder and valve chest are water jacketed to the exhaust ports, which are large and placed at equal distances around the cylinder.

The main valve is of drop forged steel, with a diameter greater than one-half that of the cylinder, and is operated by the pneumatic piston attached to its lower end. The main piston is made of close grained cast iron, as is also the crank case. The latter contains the air pressure cylinder in which the larger end of the piston works. This cylinder is faced, bored and reamed true, and at right angles to the openings for the main crank shaft bearings.

Lubrication is effected through one sight feed oil cup so arranged as to feed oil into the main or upper cylinder. Part of this oil is carried by a wiper to and passes through the trunk pin to its bearing, and thence through the hollow connecting rod to the crank bearing. The balance of the oil is distributed to the main cylinder walls by the piston, and is fed down the walls and piston to the larger cylinder in the crank case. The surplus oil is absorbed by a fibrous washer between the main crank bushing and the brass washer, striking the crank shaft arm. The compression of air in the crank case acting against the face of the brass washer forces this oil into the main crank shaft bearings by compressing the fibrous washer. The admission of air to break the vacuum in the vacuum cylinder brings with it sufficient oil to lubricate the vacuum piston.

These engines are made in four sizes, ranging from 2½ to 12 hp. The maximum speed for the two smaller sizes is 1200 rev. per min., and for the other two 1000 rev. per min. The minimum speeds for the first and third and second and fourth sizes are 200 and 150 rev. per min., respectively.

A Dreses 1 1-2 In. Turret Screw Machine.

The accompanying illustration shows a new 1½-in. turret screw machine built by the Dreses Machine Tool Company, Cincinnati, Ohio. The head and bed are cast in one piece and the friction back gearing is entirely inclosed. The frictions in the head are of the toggle joint type and so designed that the entire operating mechanism can be put in place or moved without taking out the spindle. The frictions are powerful in gripping, easily adjusted and work noiselessly.

The spindle bearings are of babbitt metal spun in their seats. The spindle nose has two blank portions and the thimble or chuck does not depend on the threads for alignment. It is held very short to bring the tools close to the bearing. The spindle thrust is taken against the inner side of the rear bearing of the head, which gives play for elongation of the spindle and allows a shorter bearing to be used at the front of the headstock.

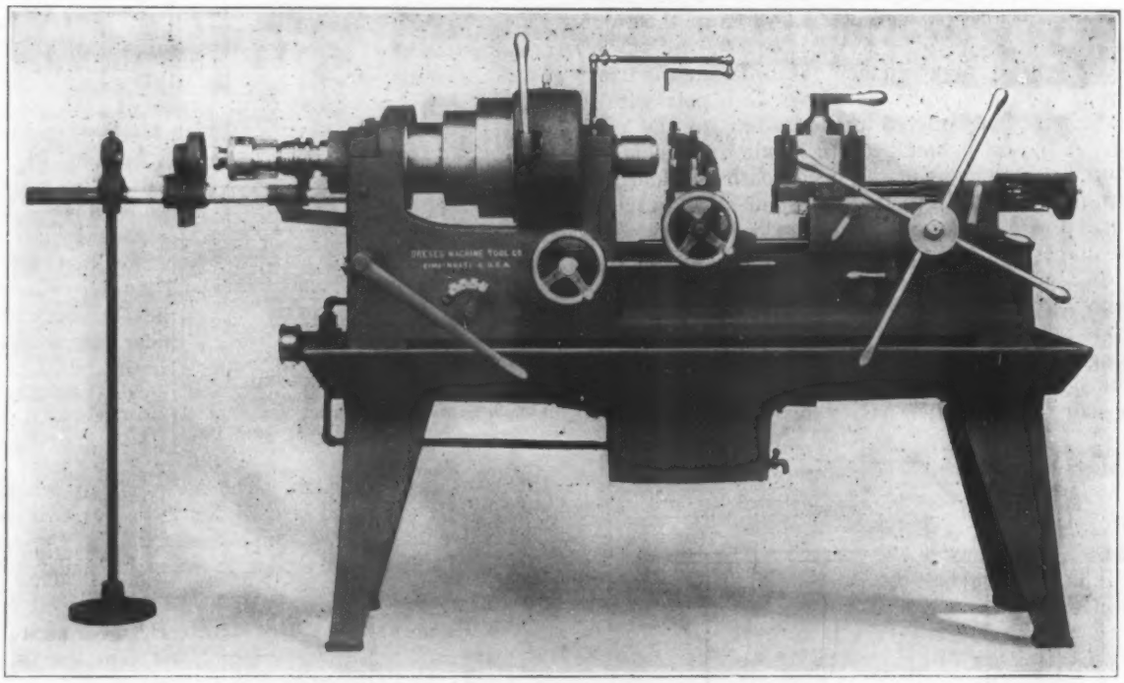
The chucking and stock feeding device is of familiar type, but the operating mechanism is simplified so as to be more conveniently handled. The operating lever shown on the left is placed in a position where the operator with his left hand can exert the greatest force with the least effort. This handle is clamped on its shaft and may be adjusted so as to position its angular movement to best suit the convenience of the operator.

The top slide of the turret is provided with six stops, one for each of the holes in the turret. This stop mechanism is placed in front and on the outside of the top slide and is operated by a cam placed at the bottom of the turret. The stop dog makes about one-quarter of a revolution and through an automatic locking plug can be instantly put out of action, so as to clear all six stops. The six stop screws are placed in the segmental shaped bracket sliding on a dovetail on the bottom slide of the turret. When the stop dog strikes a stop screw it moves the bracket forward to knock off the feed device, but a slight additional feeding can be done by hand for finishing purposes.

The turret revolves on a stem and has means for taking up the wear. It has a comparatively large index ring and a long square gibbed locking bolt holds it firmly in position. By this construction the wearing surface of the turret and slide is practically continuous and no particles of metal from the wear of the locking plug can abrade the surfaces. A geared power feed of four changes is placed in the rear of the bed and is operated by the small crank shown at the front of the headstock.

The cutting-off rest has longitudinal movement on the bed and the cross feed screw is provided with a graduated dial on the hand wheel hub. The tool posts are of a novel design. They are open on the left side so that they may be moved close up to the chuck. Wedges under the tools have a single dovetail at their lower side to keep them in place, and knurled thumb screws adjust them for hight when setting the tools.

The oil pan is especially deep to receive a large quantity of chips, and the tail end leg is attached with a hinged joint so that the machine has three point support and will rest solidly on an unever floor. The oil reservoir is hinged to the pan so that it can be easily cleaned. The inside is divided into two chambers by an overflow partition and all grit and dirt is deposited in the first before the oil reaches the second; from the latter chamber the pump draws clean oil and delivers it to the tools and work.



A New 1½-In. Turret Screw Machine Built by the Dreses Machine Tool Company, Cincinnati, Ohio.

This machine weighs about 2600 lb. and is built in three sizes, to take 1, 1½ and 2¼ in. through the wire feed arrangement.

A recent circular of the American Society for Testing Materials says that the membership is now 1220, as compared with 1160 at the last annual meeting. The American membership in the International Association for Testing Materials is 371, against 305 at the time of the annual meeting. Vol. IX of the *Proceedings* of the American Society, recently issued, contains 700 pages. The heavy expense of such a volume and of the widening work of the association have led the Executive Committee to consider an increase in revenue by raising the dues.

The annual banquet of the New England Iron and Hardware Association will be held at Hotel Somerset, Boston, on the evening of February 24. President A. B. Marble announces that prominent speakers both in and out of the trade have been secured, and that every effort will be made to have the affair even more of a success than its predecessors.

The Golden Automatic Pilot Valve.

To furnish a quick and reliable means of protecting the steam lines in a power plant in case of accident, such as the bursting of a pipe, fitting or valve, the Golden-Anderson Valve Specialty Company, Pittsburgh, Pa., has recently brought out and patented an automatic pilot valve which is intended to be installed in connection with the Golden cushioned triple acting nonreturn valve described in *The Iron Age*, July 8, 1909. The triple valve is a combination of an automatic nonreturn valve, an automatic safety stop valve, an automatic emergency stop valve, and a hand stop valve all in one, and is designed to protect the boilers in case of accident, to prevent steam from being turned into a cold boiler, and to cut off the flow of steam from the boilers in case of any accident to the piping of the plant.

The pilot valve is shown in section, Fig. 1, and its position in the piping system of the plant is given in Fig. 2. Under normal conditions the pressure in the main steam line on the upper side of the diaphragm *b* of the pilot valve holds it closed against the pressure of the large steel coil spring. This keeps the small port in the exhaust passage at the bottom of the valve closed.

The Corliss dash pot method of cushioning the triple valves is used and consists of two dash pots with a steam connection between them leading to the pilot valve. A bypass is employed to admit the full boiler pressure on both sides of the inside dash pot, and this is therefore balanced. If the steam line should become ruptured for any reason the pressure on the upper side of the diaphragm *b* of the pilot valve would be removed and the spring cause it to lift. This releases the pressure of the plunger on the upper side of the lever *j* which is forced up by the exhaust from the triple valve, opening the small port that ordinarily is kept closed by the plunger attached to the right end of *j*. The triple valve exhaust then passes through the valve and

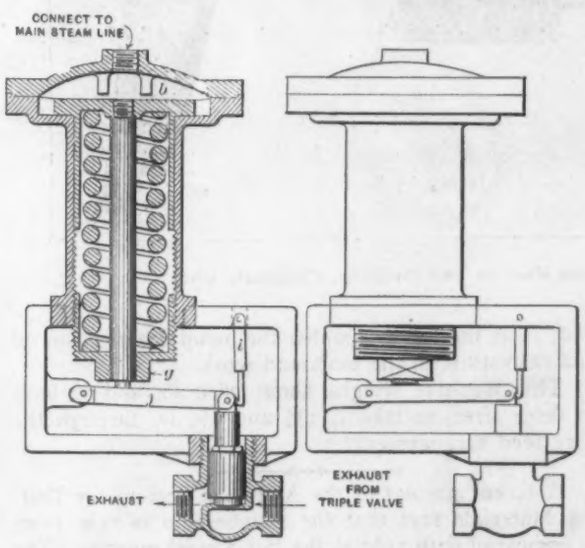


Fig. 1.—Details of the Golden Automatic Pilot Valve Made by the Golden-Anderson Valve Specialty Company, Pittsburgh, Pa.

on in the direction indicated by the arrow. The pressure from between the two dash pots of the triple valve is thus exhausted, and as the full boiler pressure is above the outer dash pot, the valve closes. If it is desired to cut off the steam supply from different points around the plant, pipes arranged to relieve the pressure above the diaphragm of the pilot valve are used.

When the lever *j* is forced up by the exhaustion of the pressure between the triple valve dash pots it is caught and held open by the latch *i*, which prevents the pilot valve from closing. To close the valve, when repairs have been made, the latch is released and the boiler pressure on the upper side of *b* causes the valve to close. If it is desired the latch can be removed, thus permitting the valve to open and close automatically. The pilot valve can be set for any desired variation of pressure by adjusting the bronze sleeve *g*. Both the triple and pilot valves can be tested at any time by closing the small valve above the pilot valve. In this way the pressure is removed from the top of the diaphragm *b*, which permits the pilot valve to open and exhaust the pressure from between the dash pots of the triple valve, which then closes.

Bronze is employed throughout in the construction of the valve, with the exception of the coil spring and

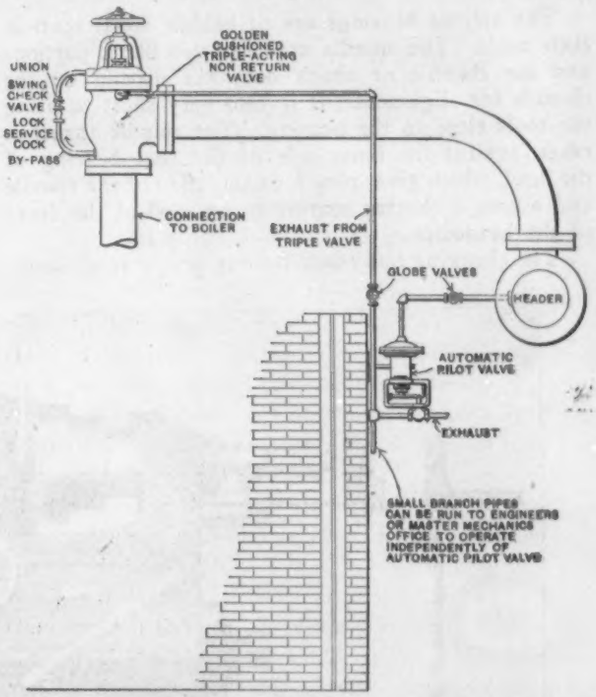


Fig. 2.—Elevation Showing the Connections of the Pilot Valve to the Header and Triple Valve.

the lever and the latch. The spring is of tempered steel, while tool steel is used for the other two parts. The valve has a ½-in. pipe connection to the triple valve and a ⅜-in. connection to the main header.

A Reassuring Word from H. C. Frick.

Henry C. Frick, who is a member of the Finance Committee of the United States Steel Corporation, is quoted in a dispatch from Augusta, Ga., as saying that "if the people will cease paying attention to the calamity-howling gamblers and demagogues, who make capital out of their fears, all will be well. It is hard to understand why, with all the conditions favorable to unprecedented prosperity in this country, there has suddenly appeared a hesitation in activity upon the part of the railroads and manufacturing establishments.

"If this cause is, as it is generally asserted, a fear of unfriendly legislation at Washington and the drastic enforcement of the antitrust law against the business organizations of the country. I cannot believe that is a sufficient reason to justify the timidity shown in many quarters. Congress will not legislate any form of property out of existence and court decisions cannot destroy the productiveness of the soil or of legitimate enterprise. We have never stood upon the threshold of better days than now, and it will be our own fault if we allow our activities to be paralyzed by groundless fears.

"In my opinion the present great depression in security values does not reflect the condition of business so much as the present hesitancy in business reflects the effect of wild conjectures upon what will happen at Washington and exaggeration of its possible consequences."

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Railroads and Their Buying Policy.

General disappointment is expressed among manufacturers of railroad equipment because they have not shared to any large extent in the revival of business. It is conceded that there are less cars and locomotives in service now than two years ago. Business has been restricted to a considerable extent during the winter, especially in the West, by the car shortage and the lack of motive power to forward cars under load. The car and locomotive shops, however, are not as well supplied with orders as they should be, and the manufacturers of miscellaneous equipment find the situation even more disappointing. Last fall the railroads began ordering quite liberally, and the stimulus of their business was felt by the steel mills, but since Congress convened there has been a disposition on the part of the leading roads to await legislative developments, and the purchase of equipment has been notably light.

The equipment industry has been affected seriously in recent years by public sentiment as reflected in legislation and governmental restriction of the railroads. Formerly the ups and downs of the equipment manufacturer coincided with the rise and fall of general business activity. When times were good and earnings increased the railroads bought liberally to increase their facilities for carrying traffic. When the reaction came in general business, and especially when the farmers suffered from depression in prices, the earnings of the railroads fell off and they had to trim expenditures closely to meet the interest on their bonds. Until recent years the purchasing department of a railroad was controlled solely by commercial policy and the ability of the company to meet the bills. The current liabilities of railroads, as reflected in their annual balance sheets, generally exceeded their current assets and they had no financial reserve to carry them through years of depression.

Since the Elkins law was enacted there has been a great change in the financial condition of American railroads. Their earnings from freight traffic have made a surprising growth, showing a larger increase than the general business of the country. Defaults and receiverships have been rare, occurring only as the result of reckless management. The credit of conservative railroads has made it possible for them to sell bonds and stocks even in the depression following a panic. Enormous amounts of capital have been used to build or acquire branches and connecting lines, and all the conservatively managed companies have accumulated large surplus funds. For several years the cash carried in the treasuries of leading railroads has amounted to $300,000,000 to $400,000,000, and even in the depression following the panic two years ago these treasury funds were not seriously impaired. Current cash assets now exceed current liabilities in the balance sheet of the average large system, without taking into account some $5,000,000,000 of securities owned by American railroad companies.

Under the conditions that prevailed years ago, a railroad was compelled, by its dependence on current earnings, to pay the highest prices for its equipment, because it could only make purchases when business was good and prices were at the highest level. Since the railroads have become prosperous and have ample reserve funds, they could effect a considerable saving if they would make their largest purchases when prices are low. During the past two years the equipment industries would have taken business at a small profit to keep their plants going and the railroads could have earned more money the past winter by having the facilities to handle the business tendered them. Machine tool interests have the same complaint to make as to their railroad business. Instead of keeping up the equipment of repair shops, by buying at lowest prices in dull periods, the railroads defer the purchase of machine tools until their increased traffic compels this department of their activities to receive attention. The railroad demand then comes as an addition to the already enlarged demand for machine tools from manufacturers, difficulty in getting deliveries becomes pronounced and a period of feverish haste in getting out tools is precipitated, which is detrimental in every respect.

It is true that the financiers in control of the leading roads are often interested in stock speculations and probably the funds that might be used to improve the physical properties of the carriers are then needed in the banks to carry the stock market. But now, when funds might be released for necessary improvements, the railroads are unable to come into the market as liberal buyers because the new element of caution on account of expected legislation has entered into their policy.

Watching Costs in the Power House.

Those who handle power equipment, especially in the smaller units for industrial purposes, find many cases where the manufacturer is applying vigorous methods to reducing costs in his works, while his power house is operating extravagantly. A not infrequent comment is that too many owners are content with their engine and boilers as long as the flywheel continues to rotate with sufficient power to turn the machinery. They have no definite knowledge as to how much it is costing them per horsepower. They have no realization of an enormous waste which may be taking place between the engine and the machine, because of poorly hung shafting or improper methods of belting, or other causes easily ascertained on investigation. Such weaknesses in shop management are becoming less common, but, no doubt, as the handlers of power equipment assert, many are still existing. To cut a coal bill in half is no small saving,

yet there are plenty of establishments where this could be accomplished or where the same amount of fuel would produce twice the power. Not only are such economies as the installation of electric drive effected, but even a few hundred dollars in repairs—in a cylinder, for example—frequently work out into notable savings.

The weakness in management lies in the failure to secure the services of an expert to study the power system and make the necessary tests. Little excuse exists for a failure to do this, for the builders of engines and boilers and electrical and pumping equipment are usually willing to send a man for the purpose, in the knowledge that the exposure of actual conditions is the best inducement that can be offered for replacing old equipment by new. Each manufacturing establishment has its peculiarities in the matter of power. In some extreme care in distributing this factor of costs between departments is desirable, while in others it is unnecessary. But no plant exists where it does not pay to keep close to the general power question. Some great works require indicator cards to be taken daily, in the effort to keep close watch on varying degrees of efficiency of the power generating apparatus, dependent upon grades of fuels, the skill of employees and like elements. The presence of an inexpert fireman is quickly noted. A lower or a higher quality of fuel is detected. A defect in the equipment can be run down without delay.

Like many another factor in costs of manufacturing, that of power is neglected by managers because their attention is too fully occupied with other details, and they have not centralized the responsibility in another, where it should rest constantly. Case after case could be cited to prove that intelligent thought in this department has made enormous relative savings. Causes of wastefulness may be hidden; the engineering test is the only proof. It should be taken with the load of the works and without it. To do this may tell a story that will astonish some owners.

The Automobile Industry and the Machinery Trade.

The automobile trade continues to boom. Reports from all sections speak of the establishment of new factories and the enlargement of old ones in the effort to keep up with the demand for motor cars. Companies are projected with a capitalization running into millions in an industry which but a few years ago was on an experimental basis. Apparently, it is now believed that a permanent trade has been established and that no greater risk is to be encountered in venturing into it than in the older branches of manufacturing industry, while the chances of profits are more alluring. Some noteworthy developments in this direction are now occurring. A resident of a Northwestern State, whose opportunities for observation are of the best, says that his whole State seems to have gone automobile-mad. "One shop after another is going over to the manufacture of motor cars, auto trucks and auto parts, and many towns which have heretofore amounted to practically nothing in an industrial sense are now coming into prominence." A great builder of heavy machinery is seriously considering the taking up of the manufacture of gasoline motors. Another builder of heavy machinery has recently been scouring a large part of the country to secure workmen skilled in making automobile motors, having evidently already gone into that branch of business. Our columns have for months borne testimony of the activity of automobile makers in drawing skilled mechanics from other industries to such an extent as to hamper their operations.

The question is now being seriously asked, Where is this to stop? Can an industry so dependent on the high purchasing power of the people continue to expand indefinitely? One may well pause to consider before casting even the shadow of doubt on a trade which did so much during the depression to keep the machine tool builders and other makers of equipment employed, but it seems that the time is approaching, although it may not be immediately at hand, when credits of automobile builders should be carefully scrutinized. Not every newcomer in the trade can be expected to succeed. Some will surely fall by the wayside. Competition for business is certain to be severe in the near future, and in this branch of trade as in others only the fittest will survive.

A British Steel Master's Plea for Protection.

Benjamin Talbot, managing director of the Cargo Fleet Iron Company, Ltd., Middlesbrough, England, and well known in the United States, particularly through the development of the open hearth furnace bearing his name, put cogently in a pamphlet issued in the recent British electoral campaign some of the facts about the British iron and steel trade in recent years. Mr. Talbot addressed his arguments to the workingmen of the Middlesbrough District primarily in the interest of tariff reform, his contention being that both capital and labor in the British iron industry is suffering from the policy of "inviting competition in our own market." It should be said in passing that "tariff reform" in Great Britain stands for the levying of duties that will be protective to domestic industry, whereas in the United States it means the reduction or the elimination of protective duties.

Mr. Talbot's position is that employees of British blast furnaces, steel works and rolling mills would have much more work, if by legislation the products of German and American works could be shut out when trade is slack with these two powerful competitors of Great Britain. He finds fault with the policy of exporting pig iron from Great Britain, rather than the finished product, showing that pig iron exports mean drawing upon native raw materials twice as rapidly as in the case of exported finished material, and at the same time the payment of a minimum of wages to home labor per ton of product turned out. How the competition of American and German works has operated against Great Britain in times of declining trade, Mr. Talbot shows in the following:

> About two years ago a financial panic occurred in the United States, and immediately Europe felt its effects. Not being able to place some of their steel products in their usual markets, which they had been supplying, they offered a quantity to consumers in this country at a price which they knew we makers could not accept, as our prices and commitments for raw materials would not permit it, neither could we take such a price without loss under existing methods, when export bounties are given elsewhere to the exporter of the billet, bars or other sections. The consequence was that on the very day bad trade occurred in America, that same day it

came to us. We were making billets for consumers, but when this break in price came to pass we could not meet the dumped price, and we had to shut down part of our works and discharge many men.

Six months ago America recovered her trade, and her President states in his annual message that trade is very busy, so busy that we are increasing our stock of pig iron in the hope that her demands may temporarily get ahead of her supply, and if so we hope to get rid of our surplus raw material, which under our present system we cannot work up into a finished condition. This accumulation of stocks of pig iron, for some other country to work up, is to my mind a sure sign of the decadence of the system under which we trade.

We are also waiting for Germany to take some of the iron, but their steel trade has to be very busy before they relieve some of the pressure from our markets here, and the steel trade is bad with us yet. It therefore appears that in this country we have bad trade in steel at the same time as in Germany and the United States, but we do not get improved trade until they are both busy and choose to divert some of their manufactures. Our period of prosperity in any given cycle of good trading years is, therefore, much shorter than either in Germany or America owing to this condition of trading.

In the first of these paragraphs reference is had doubtless to the dumping of German steel, though the context is not altogether clear. So far as the United States is concerned, as statistics show, the panic of 1907 did not result in increased steel exports, but rather a decrease. While British makers of pig iron, as Mr. Talbot says in his complaint, are willing to part with their raw materials after they have carried them but one step toward the finished state, as seen in their relatively large exports of pig iron, the policy of our steel manufacturers is not to sacrifice their valuable ore and coal by dumping steel, either semifinished or finished, in foreign markets.

Like some other British manufacturers of steel Mr. Talbot speaks in no very cheerful terms of the outlook under the continued operation of free trade. Out of the $35,000,000 worth of iron and steel imported by Great Britain in 1908, he considers that iron and steel workers there lost several million pounds sterling in wages, and he adds in that pessimistic vein which has become quite common yonder in the discussion of economic questions, "it is no wonder we are short of work, neither is it surprising that our works are depreciating in value."

Vacuum Cleaners in Industrial Plants.

The vacuum cleaner has been developed with much aggressiveness by its various builders, and has now become of recognized utility in industrial as well as residential life. The modern shop and factory are well ordered institutions, and cleanliness is a prime requisite. The vacuum cleaner is a most complete remover of dust and dirt and finer débris of all sorts. The vacuum system of cleaning promises exceptional usefulness in ridding works of those kinds of dust which are injurious to the health of employees. The manufacturers believe that they can be of great service to factories which do wet grinding, by collecting the dried sediment of particles of abrasive and metal. Where an exhaust system is installed, the apparatus is designed to be attached at conveniently spaced stations. The self-contained unit, with an electric motor attached to the fan, can be employed in any works having electric wiring. The blower and exhaust have a great usefulness, extending over a wide field. The vacuum cleaner is an addition to the scope of effort, which will undoubtedly be adopted quite generally in the next few years.

The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club on the evening of February 2, Vice-President Elmer E. Brown occupying the chair. After disposing of current business, a report from the committee which was instructed to prepare resolutions protesting against the corporation tax law was received, and after discussion the following resolution was unanimously passed:

Resolved, That the Philadelphia Foundrymen's Association, by vote of the members in meeting assembled, again place itself on record as being opposed to section 38 of the tariff bill, which became a law August 5, 1909, under which a tax of 1 per cent. on the annual profits of corporations exceeding $5000 a year was imposed.

In the opinion of the association this section of the law is apparently class legislation, and, therefore, unjust and un-American, in that corporations are taxed, while partnerships and individuals, transacting business as such, are exempt. This measure provides for taxation for the full calendar year of 1909, therefore imposing a tax for a period of seven months prior to its enactment, which, we believe, is unconstitutional, in that the constitution provides that neither Government nor State shall pass ex post facto laws.

We further object to the provision that all corporations be compelled to make public their private business affairs, through which other corporations, partnerships or private individuals might obtain valuable information to the detriment of such corporations.

It further invites the evasion of the law by the maintenance of apparent net profits below the amount stipulated on which the tax is to be levied, and incurs added expense in order that bookkeeping be conducted under the provisions of the new law, and it is further

Resolved, That a copy of these resolutions be spread on the minutes of the association and that a copy thereof be forwarded to the Senators and Representatives in Congress representing the State of Pennsylvania.

The application of Wm. F. Lowry, district manager of the American Car & Foundry Company, Berwick, Pa., for membership in the association was received and favorably acted upon.

A discussion of the general foundry situation followed. Representatives of the steel casting trade reported business very active. Makers of soil pipe are experiencing a dull condition of business, while in other branches of the trade a better flow of orders was reported. Unfavorable weather conditions, as well as the season of the year, have not been conducive to the general foundry business.

The paper for discussion at this meeting was on "The Moyer Overhead Tramrail System," by A. W. Moyer of the J. W. Paxson Company, Philadelphia. Mr. Moyer, by means of numerous lantern slides, fully described this system, particularly as to its application in carrying iron from the cupola to the pouring floors, lifting and carrying flasks, coal, coke, sand, pig iron, castings, &c., from and to cars and different parts of the foundry. At the conclusion of the paper Mr. Moyer was given a unanimous vote of thanks for his interesting review of that subject. After adjournment luncheon was served in the dining room of the club, and informal addresses were made by a number of those present.

Canadian newspapers state that E. R. Wood, J. H. Plummer and Robert Fleming are promoting a plan to merge the Dominion Iron & Steel Company, Dominion Coal Company, Lake Superior Corporation, Atikokan Iron Company, Montreal Rolling Mills, Hamilton Steel & Iron Company, Canadian Foundry Company, and probably some other Canadian manufacturing interests. Mr. Fleming is the representative of large British financial interests, so that the flotation, if carried through, will be largely by English capital.

For the first time in nearly three years practically all departments of the plant of the Westinghouse Machine Company, East Pittsburgh, Pa., are being operated overtime.

The American Can Company's Report.

The American Can Company's report for the year ended December 31 shows net earnings of $3,301,678, a gain of $189,780 over those of 1908. The amount written off for depreciation totaling $545,526, against $405,634 in 1908, left net profits at $2,756,152, against $2,706,264 for 1908. The surplus of $6,028,580 compares with $5,334,094 the year before.

President Graham speaks as follows of the sums spent for new construction and the increase in working capital:

There has been expended during the year in the purchase of factory sites and construction of new properties and the installation of new and additional equipment the sum of $747,945. This covers the cost of a new factory at San Francisco to replace one destroyed by fire in the fall of 1907, the value of which had been previously written off; important extensions of plants at Montreal, Canada; Newcastle, Pa.; New Orleans, La.; Savannah, Ga., and many minor ones, and other factories, and the installation of sprinkling systems in a number of factories which had not previously been thus protected from fire loss.

The expenditure, however, does not include the replacement of old by new equipment or the improvement of old equipment. Such costs were charged directly into operating expenses.

The working capital of the company has been increased during the year by $843,259, which is represented by cash or quick assets.

The Goldschmidt Detinning Company, organized by interests identified with the company, is now in operation, and "making good its promise of commercial success."

The Pittsburgh Foundrymen's Association.

The monthly meeting of the Pittsburgh Foundrymen's Association was held at the Fort Pitt Hotel, Pittsburgh, on the evening of February 7. A dinner was first served to over 60, after which the meeting was called to order by President Joseph T. Speer. After the transaction of routine business President Speer introduced L. J. Gobeille, Niagara Falls, N. Y., who read a paper on "The Pattern Shop of To-day," giving many practical points, but investing his subject with brilliant epigrams.

Messrs. Gale, Fuller, Sleeth, and others brought out some points on which they desired to be enlightened, and Mr. Gobeille offered suggestions as gained from his everyday experience. The making of patterns from concrete, which was one of the features of the paper, will no doubt receive the serious attention of many foundrymen in the near future, regardless of whether they manufacture light weight castings for automobiles or larger ones for mill housings, &c. A vote of thanks was extended the author.

Large Electrical Apparatus Contracts.—The West Penn Railways Company has purchased from the Westinghouse companies a large amount of apparatus to be added to the capacity of its power house at Greene Junction, Pa. The machinery includes two Westinghouse steam turbines of 6000 kw. each, which will be supplied by the Westinghouse Machine Company, and two Westinghouse generators of 6000 kw., two-phase, 60-cycle, 2300 volts, 1800 rev. per min., alternating current, which will be furnished by the Westinghouse Electric & Mfg. Company. The latter company will also supply two generator exciter sets of a capacity of 100 kw., 125 volts, 1800 rev. per min., direct current. These exciters will be driven by two Westinghouse steam turbines of equal capacity, which will be made by the machine company. The addition of this machinery will practically duplicate the capacity of the West Penn Railways Company's power house, which, it is understood, will be utilized upon several important extensions of its electric railroad lines which the company has had under way for some time. The first complete unit is to be delivered and installed by August 1, 1910.

Labor Notes.

A large number of machinists, reported at from 1000 to 1200, employed by the Bethlehem Steel Company, at South Bethlehem, Pa., went out on a strike last week. The question at issue is that of pay for overtime work. Several conferences have been held, and it is reported that some of the strikers have been organized by officers of the International Association of Machinists. A proposal was made that the men return to work pending an adjustment of the question of overtime pay, but with this came up the question of the company's right to employ such men as it chooses. Efforts of the strikers to get out men in other departments have been unsuccessful.

A dispatch from Sharon, Pa., says that the American Steel Foundries has granted an advance of 25 cents a day to molders and of 35 cents a day to coremakers.

An officer of the International Iron Molders' Union interviewed at New York, says that the demand for molders throughout the country is good and that few are idle. In general, however, the trade of the foundries is better than in New York. The demand for men for foundry work and throughout the metal trades, while good, is reported to be not as yet as insistent as in 1906. In this connection an officer of the International Association of Machinists is quoted as saying that the general impression among employers is that the tariff question will come up again.

Announcement has been made by the Phœnix Iron Company, Phœnixville, Pa., that it will on March 1 restore the wage scale of about a year ago, when a reduction of 10 per cent. was made. An increase of 5 per cent. was made last summer, so that a further increase of a like amount on March 1 will restore the old rate.

Machine Tool Duties Lowered by Germany.

Under the new commercial agreement with Germany, just negotiated by the State Department, all American machines for working metals, wood or stone are to pay considerably lower duties. Instead of the general or maximum rate being imposed, as heretofore, the conventional or minimum rates are to apply. The old rate of duty on such machines or tools, weighing 250 kilos (550 lb.) or less, was 20 marks ($4.76) per 100 kilos (220 lb.); the new rate is 12 marks ($2.86). Over 250 and up to 1000 kilos the old rate was 12 marks per 100 kilos; the new rate is 8 marks. Over 1000 and up to 3000 kilos, the old rate per 100 kilos was 8 and the new rate is 6 marks. Over 3000 and up to 10,000 kilos the old rate per 100 kilos was 6 and the new rate is 5 marks. Over 10,000 kilos the old rate per 100 kilos of 4 marks is unchanged. Duties on other machinery have also been lowered.

The Standard Steel Car Company Buys the General Castings Company.—The Standard Steel Car Company, Pittsburgh, has bought at receiver's sale for $235,000 the plant of the General Castings Company, at Verona, Pa., near Pittsburgh. The court has approved the sale, and the purchaser has taken possession of the plant, intending to operate it in the manufacture of miscellaneous castings, car fixtures and parts. The site includes 9½ acres, and the plant is splendidly equipped. There are three open hearth furnaces, five electric traveling cranes, &c. The plant was built in 1904, just after the formation of the American Steel Foundries by Daniel Eagan and associates. The company succumbed to the panic two years ago. The price realized at the sale was much higher than had been expected.

New Publications.

Metal Statistics. Pages, 176; 3¾ x 6¼ in.; cloth bound. Published by the American Metal Market Company, New York. Price, 20 cents.

This is the third issue of this statistical handbook and the second year in which iron and steel statistics have been made a part of it. The 1910 edition contains all the features of those which preceded it and has several additional ones, including typical analyses of Lake Superior ores and analyses of steel making irons and of No. 2 foundry iron. Production and price statistics are given for the various metals and for representative forms of iron and steel products, the whole making a very valuable reference book. The matter pertaining to iron and steel was prepared by B. E. V. Luty, Pittsburgh, and this portion of the book is one-half larger than in 1909.

The Corrosion of Iron and Steel. By Alfred Sang. Pages, 141; 4¾ x 7¼ in.; cloth bound. Published by McGraw-Hill Book Company, New York. Price, $1, net.

The book is an expansion of a paper read before the Engineers' Society of Western Pennsylvania, at Pittsburgh, December 15, 1908. It is to a considerable extent a compilation and study of the results obtained by various investigators, while the author's experience adds much that is of value. The various theories of corrosion are discussed at length, and the familiar question of the relative corrosion of iron and steel is given some attention, the contributions of various authorities to this inquiry being summarized. The author apparently does not attach as much importance as has been given in some quarters to the slag protection claimed for wrought iron. An interesting chapter is that dealing with iron and steel embedded in concrete. Concerning the inhibition of rusting, the author says: "Inhibitory treatments are valuable for application in connection with various shop processes, but they offer no permanent solution to the problem of protecting iron and steel against corrosion. The improvement of the quality of the metals themselves and proper treatment of their surface both mechanically and by the incorporation of other metals previous to coating with paints or malleable metal deposits, would seem to constitute the most promising field for research."

A feature of the book is its extensive bibliography, covering 23 pages. More than two pages are given up to references to papers and articles quoted in the text.

The Mechanical Appliances of the Chemical and Metallurgical Industries. By Oskar Nagel, Ph.D. Size, 6 x 9 in.; 307 pages, 292 illustrations. Price, $2 net. Cloth bound. Published by the author, P. O. Box 385, New York City.

This is the second edition of a book which is intended to give a complete description of the machines and apparatus employed in chemical and metallurgical processes, for the benefit of chemists, metallurgists, engineers, manufacturers, superintendents and students. The work is arranged in 15 chapters. The first chapter is a general discussion of supplies such as packing, pipe covering, expansion joints and valves, while the next three deal with steam and water, gas and electric power respectively in a general way. Following these are chapters on the transportation of solids, liquids and gases. Each of the next seven chapters deals with some special operation connected with the industries, such as grinding, mixing, firing, separating, gas purifying, evaporating, distilling and condensing, and drying. The final chapter is devoted to the measurement of temperatures, and this is followed by an appendix which is an extract from a paper entitled "The Works Chemist as an Engineer," read by Oscar Guttman before the Society of Chemical Industry.

The author states that one object in preparing the book has been to make buyers of machinery thoroughly familiar with the best types of machines for different operations and thus enable them to see whether or not a new one possesses all the essential details for a particular class of work or if it has some new and important features.

Railroads and the Cost of Living.

The representatives of the Eastern railroads issued the following statement, on behalf of the railroads, February 5:

"At a time when active efforts are being made to fix the responsibility for higher prices, it should be made plain that the railroads have not in any way been responsible for the increase in the cost of living. They have been the victims of high prices without benefiting from them at all. This statement is not one of opinion—it is one of fact, supported by the official figures of the United States Government. If beef, or pork, or flour, or any other commodity costs more now than it cost 10 years ago, not even the fraction of a cent of the increase can be charged to transportation.

"The figures gathered by the Interstate Commerce Commission show that the level of freight rates has declined steadily. In 1897 it cost a little less than four-fifths of a cent to ship a ton of freight one mile; 11 years later, in 1908, the ton-mile rate was still lower, being about three-quarters of a cent.

"Bradstreet's index numbers for 96 commodities show that the increase in the prices of these commodities, on the average, from January 1, 1890, to January 1, 1909, was 21.4 per cent. If freight rates had increased during the same period at this ratio, the gross freight receipts for the year ended June 30, 1908, would have been $243,536,407 greater than they actually were. This sum represents, then, what was saved to the public in transportation costs by reason of the price of transportation not advancing along with other prices.

"While rates have declined, the price of everything that a railroad buys has advanced, so that the net earnings are cut into from both ends. Periodical advances in wages have brought about a large increase in the cost of labor. The total cost of fuel for the country's railroads was 208 per cent. greater in 1907 than in 1897, though freight traffic increased only 148 per cent. and passenger traffic only 126 per cent.

"Railroads are heavy purchasers of everything on the market, from steel to butter, and no corporation or individual is more affected by a rise in price than a railroad company. A few specimen increases since 1897, in the prices of things the companies have to buy, are as follows: Lead pipe, 55 per cent.; yellow pine, 85 per cent.; hemlock, 102 per cent.; window glass, 27 per cent.; cut nails, 62 per cent.; common locks, 140 per cent.; steel door knobs, bronze plated, 171 per cent. These are only a few examples illustrative of the general movement."

The Blaw Collapsible steel Centering Company, Pittsburgh, Pa., has purchased the plant of the Pittsburgh Industrial Iron Works, Reynoldsville, Pa. It consists of four buildings. Two of these are shops, 75 x 360 ft. and 100 x 220 ft., respectively. The others are a power house and an office building. At the present time the Blaw Company is operating both the plants, the old one at Rankin and the new one at Reynoldsville, Pa. Owing to the increased capacity, the company is in a position to make quick delivery of all the kinds of centering apparatus for concrete work which it manufactures.

The National Association of Brass Manufacturers will hold its spring meeting at the Hollenden Hotel, Cleveland, Ohio, on Wednesday and Thursday, March 16 and 17.

PERSONAL.

F. A. S. Andrew, who for the past 20 years has been associated with the Pyle & Blaina Works, Ltd., one of the leading British manufacturers of spiegeleisen and ferromanganese, has joined the firm of E. A. Herbert & Co., Ltd., Lloyd's House, 6 Lloyd's avenue, London, E. C., England, as a director. He will supervise in particular the department dealing with spiegeleisen, ferromanganese, ferrosilicon, silicospiegel and other alloys, together with manganese, manganiferous iron and other ores.

Severn P. Ker, who, as vice-president and general manager, has been in charge of the affairs of the Sharon Steel Hoop Company, Sharon, Pa., since the beginning of the illness of its late president, Morris Bachman, was on February 1 elected president, at the annual meeting of the company. O. A. Blackburn was elected vice-president; Charles Bachman, treasurer, and J. Reed Evans, secretary. There was no change in the Board of Directors. The business of the corporation is in excellent condition, with prospects of the brightest.

The Carpenter Steel Company, Reading, Pa., announces the appointment of Fred A. Bigelow, formerly its representative in New England, as manager of its Cleveland branch, with office and warehouse at 1304 West Sixth street, Cleveland, Ohio.

C. H. Zehnder, New York, has been elected vice-president of the Empire Steel & Iron Company, to succeed the late James W. Fuller. As Mr. Fuller's successor on the Board of Directors his son, J. W. Fuller, Jr., has been elected, and the latter is also a member of the Executive Committee.

Arthur J. Schratwieser, superintendent of construction work of the Schratwieser Fire Proof Company, 426 to 432 Third avenue, Brooklyn, N. Y., was elected secretary and treasurer of the company at a meeting held February 3.

E. T. Scovill has been elected a director of the Brown Hoisting Machinery Company, Cleveland, succeeding the late Fayette Brown.

The Western Steel Corporation, Seattle, Wash., which has taken over the blast furnace and steel plant at Irondale, has secured quite a number of practical men from Pittsburgh steel works. Among these are Carl Maeder, general superintendent, who comes from the Duquesne Works of the Carnegie Steel Company; N. V. F. Wilson, assistant general superintendent, from the Colonial Steel Company; H. B. Evans, superintendent of the open hearth department, from the Colonial Steel Company; A. Merzbacher, chief chemist, from the Crescent Steel Works of the Crucible Steel Company of America. Others occupying prominent positions in the works have been drawn from steel plants in various other portions of the country. David Whitcomb, formerly of Worcester, Mass., has been elected secretary, succeeding M. M. Lyter, who has been made general counsel.

Charles H. Kelly, formerly of Lima, Ohio, has been made general manager of the Muncie Iron Works, Muncie, Ind.

John T. Ware, for some years connected with the sales department of the Birmingham Coal & Iron Company, Birmingham, Ala., has severed his connection with that company, effective April 1, to locate in Denver, Colo., as a manufacturers' agent.

George A. Fletcher has been made factory manager of the Brazil Machine & Foundry Company, Brazil, Ind. He was for several years city engineer and superintendent of the Brazil water works.

George G. Mason of New York City and William S. Mason of Evanston, Ill., both of the class of 1888 in the Sheffield Scientific School of Yale University, have made a joint gift to the school of $250,000 for a laboratory of mechanical engineering. It will be known as the Mason Laboratory of Mechanical Engineering.

George W. Smith has been elected president of the Seneca Transportation Company, which is the marine department of the Lackawanna Steel Company, Buffalo, N. Y., succeeding George F. Mackay. Mr. Smith was recently appointed a member of the New York State Employees' Liability Commission.

E. W. Edwards, president of the Edwards Mfg. Company, Cincinnati, Ohio, is on the ocean in the first stages of an extended trip around the world which is expected to consume six months.

OBITUARY.

A. Digby Bonnell, for the past 27 years a member of the firm of John W. Quincy & Co., 81 Fulton street, New York, died February 4, while at his daughter's home at Swarthmore, Pa. He was widely known in the pig iron trade, and leaves an enviable record.

Thomas C. Craig, president of the Pennsylvania Forge Company, Bridesburg, Philadelphia, Pa., died January 26, from pneumonia, after a brief illness. He leaves a widow and two children.

D. F. O'Neil, president of the Western Foundry Company, Chicago, died February 4, at Sea Breeze, Fla., aged 45 years. He was born in Cleveland, Ohio, and early in the '90s organized the Western Foundry Company at Chicago, of which he became president, holding that office until his death. He leaves a widow and four children.

Chicago's Annual Cement Show.—The third annual Chicago cement show will be held in the Coliseum February 18 to 26, inclusive. There will be 214 exhibitors at the show, and the list includes firms manufacturing cement, reinforcement for concrete work, concrete block machinery, concrete construction companies, trade and technical journals devoted to cement and concrete industry and manufacturers of concrete specialties. The annual conventions of the National Association of Cement Users, the American Society of Engineering Contractors, the National Builders' Supply Association, the Illinois Association of Municipal Contractors, the Illinois Lumber Dealers' Association, the Illinois Masons' Supply Association and the Northwestern Cement Products Association, will be held in conjunction with the show. The customary reduced rate of a fare and one-half for the round trip has been made by all the railroads entering or connecting with Chicago.

Building of Open Hearth Steel Plant Postponed.—At a meeting of the Executive Committee of the Ohio Iron & Steel Company, Lowellville, Ohio, held last week, it was decided that the building of the proposed open hearth steel plant adjoining the blast furnace of the company be postponed for the present. The reasons for this action are the high prices prevailing for all classes of material entering into the construction of the plant, inability to get prompt deliveries and other considerations of importance. The company advises us that the matter of contracts will not be taken up until late in the fall, if at all in the present year.

According to a San Francisco dispatch, Balfour, Guthrie & Co. have chartered the Norwegian steamship Titania, having a carrying capacity of 5000 tons, to load structural steel at Antwerp for Portland, Ore., and San Francisco. This vessel took grain from Portland last October, and only recently arrived at Cardiff. She will be due at Portland late in May, coming around the Horn. A full cargo of structural steel from Europe is a rarity, steel for the Pacific Coast ordinarily coming as part cargoes in tramp steamers.

Steel Rail Specifications.

Another Proposed Revision—Experience with Heavy Base Sections Disappointing.

Bulletin No. 118 of the American Railway Engineering and Maintenance of Way Association contains among other reports that of the Committee on Rail, with which a new form of rail specification is submitted. After reviewing previous reports it takes up the subject of specifications and makes interesting comments on the experience thus far had with the new "A" and "B" sections of the American Railway Association. Particular significance attaches to the statement that experience thus far with the heavy base A. R. A. sections has been disappointing. We quote from the report as below:

The Rail Situation Reviewed

A new specification should not be proposed at this time without careful consideration. So far as we know, no railroad company has purchased rails under specifications approved by the American Railway Association and referred to us; nor do we know of any railroad company that has succeeded in buying rails during the past two years according to a specification entirely satisfactory to the railroad company. We believe that all of the specifications under which rails have been rolled have been compromises on the part of both parties, with the general result that neither party is entirely satisfied. Our experience during the year has brought to our attention some defects in all of the specifications now before us, and acting under the impression that there is a distinct feeling that we should revise our specifications, we offer the attached specifications for your consideration. Our association has no specification for open hearth steel rails, and in order to comply with the instructions, a specification for open hearth steel rails is included.

PHOSPHORUS AND CARBON.

We believe it necessary to submit a sliding scale for the percentages of carbon and phosphorus, which provides for increasing the carbon as the phosphorus decreases. The fixing of this scale properly is a matter requiring care and we admit that our knowledge on the subject is limited. The American Railway Association specification calls attention to this matter in the following words: "When lower phosphorus can be secured, a proper proportionate increase in carbon should be made." The amount of increase is not provided for in the specifications and this appears to us to be necessary in order to secure uniformity of practice; otherwise, the fixing of these percentages becomes a matter of special arrangement. Bessemer rails are being furnished regularly with phosphorus under the maximum allowed, and where this is done, the carbon should be raised above the higher limit now fixed in our specifications, or a soft and poor wearing rail will result; yet this condition has not been fully guarded against in rails furnished under existing specifications. The lower and upper limits for carbon have heretofore been fixed with the intention that the mills furnish rails with a composition as near between the two limits as possible. The mills, however, in order to meet the prescribed drop tests with the least difficulty, keep both the carbon and manganese as nearly as possible to the lower limits, with the corresponding result that a generally poor wearing rail is furnished.

Some roads have prescribed the limits of deflection to be allowed under the drop test. With our present knowledge, we believe that we should fix a minimum deflection to eliminate brittle rails and to secure greater uniformity of product; also maximum deflection to eliminate soft rails. We are not able at the present time to fix these limits, but our ultimate object will be to determine and fix such limits for the specifications.

REGULATION OF MILL PRACTICE.

With reference to the amount of discard, time of holding in ladle, size of nozzles, and other such details of manufacture or machinery, we are of the opinion that the physical and chemical tests required should be prescribed and that we should see that the material submitted for acceptance meets the prescribed tests. We should not dictate to the manufacturers the amount of crop which shall be removed from the top of the ingot, as this should vary with the care and time consumed at the various mills. The railroads should not be asked to take anything but sound material in their rails. The mills can furnish such sound material if the proper care and sufficient time are taken in the making of the ingots. Information derived from the tests being made at the Watertown Arsenal shows definitely that sound rails cannot be made from unsound ingots, and that, therefore, the prime requisite in securing a sound rail is to first secure the sound ingot.

We recommend that the present specifications for steel rails be withdrawn from the manual of recommended practice of the association, as no longer representing the current state of the art.

We submit herewith a form for specifications. It will have to be amended from time to time as we receive further information on the subject.

STANDARD RAIL SECTION.

The instructions of the American Railway Association require us to study the A. R. A. sections "A" and "B" in use and submit a single type for standard. Owing to the conditions existing in 1908, very little rail was laid, and practically none of the A. R. A. sections, in such manner as to give the needed information. This year, several roads have laid A. R. A. sections of rail, with a view of determining the relative merits of the respective sections. These rails have been in the track so short a time that we are not justified in drawing any conclusions as to which of the A. R. A. types, "A" or "B," or if either is better than the A. S. C. E. sections. Bulletin No. 116, issued October, 1909, gives the statistics for rail failures for six months from October 31, 1908, to April 30, 1909, as reported to the committee. These statistics do show that the difference in section can be entirely annihilated by difference in chemical composition and by the treatment in furnace and mill. The results so far obtained from the heavy base A. R. A. sections are disappointing, as we have received some rail from the mills of the new section which was as bad as we did with the old A. S. C. E. section, showing that the quality of the rail does not depend entirely upon the section. The tests to be inaugurated by the committee, combined with the results of the tests at Watertown and the performance of the rail in the track, will give us valuable data to aid us in coming to a final conclusion. The small demand as indicated by mill sales data and the slight possible variation in section of rail below 75 lb. weight per yard, makes inadvisable the consideration of new sections for this light-weight rail.

No recommendation as to sections of 75 lb. and over is made at this time, because of the lack of undisputed data upon which to base such design, the service value of the rail unquestionably being dependent upon chemical composition, furnace practice and mill practice, as well as upon the detail differences of dimensions, and the exact effect of each of these various factors is largely in doubt.

RAIL JOINTS, DRILLING AND TESTS.

The tests at Watertown have not progressed as far as we would wish. It is deemed advisable to await these results before submitting recommendations on this subject. The committee will compile the information received from the Watertown tests and publish a special bulletin with the information at hand.

We are not ready to recommend any changes, although we are of the opinion that it is desirable to make a change. The tests now being made on joints at the Watertown Arsenal should give some information to aid us in fixing a proper drilling. The drilling now adopted as standard and incorporated in the manual causes interference in the six-hole angle bars between bolts and spikes where slotted holes for spikes are used. We would recommend that railroad companies which have not adopted the standard drilling postpone action for another year.

The committee is arranging for a series of tests on rails of different sections and weights of both Bessemer and open hearth steel, manufactured by different mills, with a uniform chemical composition for each kind of rail. The tests are to embrace drop tests, tests on revolving machine at Steelton, tests on reciprocating machine at Sparrows Point, and a service test in track, the work to be done under the supervision of a man working under the committee.

Features of the Proposed Specifications.

The committee's proposed specifications follow in many particulars those of the American Railway Association. The chemical composition of Bessemer and open hearth rails differs somewhat, however, from that of the above named association, and is as follows:

	Bessemer.		Open hearth.	
	80 lb. and under.	85 to 100 lb. inclusive.	80 lb. and under.	85 and 100 lb. inclusive.
Carbon	0.40 to 0.50	0.45 to 0.55	0.53 to 0.66	0.63 to 0.76
Manganese	0.80 to 1.10	0.85 to 1.15	0.75 to 1.00	0.75 to 1.00
Silicon	0.10 to 0.20	0.10 to 0.20	0.10 to 0.20	0.10 to 0.20
Phosphorus*	0.10	0.10	0.04	0.04
Sulphur*	0.075	0.075	0.06	0.06

* Maximum.

In regard to the relation between phosphorus and carbon the American Railway Association specification provides that "when lower phosphorus can be secured a proper proportionate increase in carbon should be made." The report of the Maintenance of Way Association's Committee has the following:

When lower phosphorus can be secured in Bessemer or

open hearth steel the carbon shall be increased at the rate of 0.035 for each 0.01 reduction in phosphorus. The percentages of carbon, manganese and silicon in an entire order of rail shall average as high as the mean percentages between the upper and lower limits.

The drop tests of the American Railway Association specifications provide for a fall of 16 ft. for 60, 70 and 80 lb. rails, 17 ft. for 90-lb. and 18 ft. for 100-lb. rails. The proposed Maintenance of Way Association specifications provide a fall of 16 ft. for 60 and 70 lb. rails, 18 ft. for 80, 85 and 90 lb. rails and 20 ft. for 100-lb. rails.

The Kewanee Boiler Company's Improvements.

Five new buildings of the most improved type of factory construction, which will cover more than two acres, are to be added to the plant of the Kewanee Boiler Company, Kewanee, Ill., on the ground recently acquired north of the present works of the company. Plans for these buildings are now assuming definite form, and work will be started as soon as the weather permits, to be rushed to completion as rapidly as possible. No contracts have as yet been awarded. The buildings to be erected are as follows: Addition to boiler shop, new foundry and machine shop, radiator machine shop, radiator cleaning room, large storage room.

The addition to the boiler shop will be 122 x 128 ft., with a bay on each side. It will be of steel construction, with brick walls built a few feet up from the ground, the balance of the wall being of glass set in steel frames, to obtain the greatest possible amount of light. In this new addition will be a riveting tower, 36 x 60 ft., all steel, in which a new riveter is to be installed, together with many other devices and tools which will facilitate operations. An important change in the present boiler shop will also be made in connection with the construction of this addition. About 200 ft. of the roof of the present shop is to be raised 12 ft. This change is to be made for the purpose of giving more room for the cranes. One 60-ft. and one 38-ft. crane will be added.

The foundry and machine shop will be built in the northwest corner of the grounds and will be 80 x 432 ft. It will be constructed along the same general lines as the boiler shop, and will be arranged with a 40-ft. crane. The pattern shop and storage room for patterns will also be in this building. At the north end of the present radiator shop will be a building, 130 x 160 ft., with saw-tooth roof, which will be used as the radiator machine shop. A radiator cleaning room, 80 x 80 ft., and a storage room, 80 x 80 ft., will also be erected. Hydraulic machinery and air compressors will be installed in the machine shop.

The machinery to be installed in these buildings will be operated by electricity. Provision has been made for the best machinery and equipment of every kind, and careful consideration has also been given to the safety, health and comfort of employees who may work for the company. It is estimated that the improvements will give the plant an additional capacity of 25 per cent. Another radiator molding machine is being built by the company, which will also increase the radiation output. The number of additional employees that will be required will depend largely on general business conditions. It is estimated that the total cost of this work will be approximately $200,000.

The New York Shipbuilding Company, Camden, N. J., on February 5 launched the steamship Coastwise, building for the Coastwise Transportation Company, Boston, Mass. With a sister ship of the same type, now being built in the same shipyard, it will be used in the coastwise coal carrying trade. The vessel has a capacity of 6500 tons, and will average 12 knots per hour.

Heavy Damages Against Boycotters in the Danbury Hat Case.

A verdict for $74,000 was brought in at Hartford, Conn., February 4, in the United States Court by the jury in the suit of D. E. Loewe & Co., Danbury, Conn., against 200 union hatmakers in Connecticut. The suit grew out of the boycott of the plaintiffs by the United Hatters of North America in the hatmakers' strike in 1902-3. It was brought under the Sherman antitrust act, and as that provides for a penalty three times the amount of damages awarded, the defendants will have to pay $222,000. The case was conducted for the plaintiffs by Daniel Davenport, the well-known attorney of the American Antiboycott Association. The judge in his charge practically instructed the jury to bring in a verdict for the plaintiff. He said the only question for them to decide was one of damages, and these were to be based upon the losses sustained by the plaintiff between July, 1902, and September, 1903, the period during which the boycott against the Loewe factory was maintained. A bill of exceptions will be filed by the defense and the case will be carried to the Federal Court of Appeals and the United States Supreme Court.

The suit was on trial for 11 weeks. The litigation started six years ago and delays were caused by various motions and demurrers. The question whether the Sherman act had been violated was carried to the United States Supreme Court and its opinion, given February 3, 1908, overruling the strikers' demurrer contained the following:

> Defendants were engaged in a combined scheme and effort to force all manufacturers of fur hats in the United States, including the plaintiffs, against their will and their previous policy of carrying on their business, to organize their workmen in the departments of making and finishing in each of their factories into an organization, to be part and parcel of the said combination known as the United Hatters of North America, or as the defendants and their confederates term it, to unionize their shops with the intent thereby to control the employment of labor in and the operation of said factories and to subject the same to the direction and control of persons other than the owners of the same, in a manner extremely onerous and distasteful to such owners, and to carry out such schemes, effort and purpose by restraining and destroying the inter-State trade and commerce of such manufacturers by means of intimidation of and threats made to such manufacturers and their customers in the several States, of boycotting them, their product and their customers, using therefor all the powerful means at their command as aforesaid until such time as from the damage and loss of business resulting therefrom the said manufacturers should yield to the said demand to unionize their factories.

Attorney Davenport said of the effect of the verdict given at Hartford last week:

> First, it means that individual members of labor unions are bound by the actions of their officers and they cannot allow them to do as they please.
>
> Second, it means that the Sherman anti-trust law protects manufacturers and merchants from boycott attacks. In substance, it is a new declaration of independence.

Attorney James M. Beck, New York, who argued the demurrer in the Supreme Court at Washington, said of the outcome of the two notable boycott cases—the Buck's Stove case and that at Danbury:

> The Buck's Stove case established the right of a court of equity to enjoin the continuance of a boycott; while the Danbury hat case establishes the power of a court of law to give punitive damages for the injuries previously inflicted by a boycott. Taken together, the two decisions give an effective defense both to employers and to independent employees. The two decisions are likely to play an equally important part in the social and political history of this country with the Taff-Vale decision in England.

The expense of defending the suit is being met by the United Hatters of North America, which filed a bond to cover the amount of the attachment of the property of the defendants, including their savings accounts in various banks.

NEWS OF THE WORKS.

Iron and Steel.

Some addition will be made in the near future to the motor equipment of the Maryland Steel Company, Sparrows Point, Md.

The Clyde Iron Works, Duluth, Minn., has booked an order for four large electric hoists and derricks, which it is reported will be used on construction work at the Minnesota Steel Company's plant.

The Western Steel Corporation, Seattle, Wash., is getting its blast furnace at Irondale, Jefferson County, Wash., in readiness for blowing in at an early date.

With the blowing in of the reconstructed No. 2 furnace at the Ensley, Ala., group of the Tennessee Coal, Iron & Railroad Company last week, all six blast furnaces are now in operation for the first time in several years.

The Phillips Sheet & Tin Plate Company is moving its main offices from Clarksburg to Weirton, Hancock County, W. Va. It is expected to have the Weirton plant in operation about March 1.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, will send out official notices shortly of its intention to engage in the manufacture of wire fencing. It is now a large manufacturer of wire nails, wire rods and wire in its mills at Haselton, Ohio. The wire fence department is expected to be ready for operation early in April and will have a capacity of about 12,000 rods of fence per day.

Reports that the Brier Hill Iron & Coal Company, operating Grace Furnace at Youngstown, Ohio, is considering the matter of erecting an open hearth steel plant, are officially denied by President J. G. Butler, Jr.

General Machinery.

The Standard Scale & Supply Company, Pittsburgh, has made arrangements to manufacture its line of Eclipse concrete mixers at the Beaver Falls, Pa., plant, where it makes its scales. The mixer in the past was built in Chicago, but this department will be merged with the scale department and will be ready for operations about March 1.

The W. W. Patterson Company, 54 Water street, Pittsburgh, reports business improving. Its present operations cover 75 per cent. of its capacity and the following are recent shipments made: Ohio Works of Carnegie Steel Company, Youngstown, Ohio, wood blocks for manila ropes; McClintic-Marshall Construction Company, Pittsburgh, standard extra heavy wood blocks; Riter-Conley Mfg. Company, Leetsdale, Pa., heavy steel blocks for wire cable; besides wood blocks for manila ropes and steel blocks for wire ropes shipped to smaller concerns.

The Standard Engineering Company, Elwood City, Pa., has received a contract from the National Tube Company for motor driven pipe threading machines ranging in capacity from 3 to 20 in., inclusive, to be installed in its National Works, McKeesport, Pa. The 15 24-in. cold mills and 12 28-in. hot tin mills recently completed and shipped by the Standard Engineering Company to Jones & Laughlin Steel Company, Aliquippa, Pa., are being erected and will be ready for operation at an early date. Other recent shipments include a motor operated roller table for the Youngstown Sheet & Tube Company, Youngstown, Ohio, and a geared drive for the axle mill of the Indiana Steel Company, Gary, Ind.

McCoy & Brandt, Pittsburgh, dealers in new and second-hand machinery, recently shipped the El Reno Packing & Provision Company, El Reno, Okla., a 125-ton Arctic refrigerating machine.

Foundries.

The Murphy Iron Works, Detroit, Mich., has decided upon the erection of a steel frame foundry building, 125 x 500 ft., for gray and malleable iron castings. Only the most modern equipment will be installed.

The E. J. Welch Foundry Company, Chicago, has been consolidated with the James A. Brady Foundry Company of that place, and will be operated under the name of the latter.

The Eureka Brass Company, St. Louis, Mo., will be in the market for some equipment before the end of the present year, and the layout of the plant may be considerably extended.

The Scow Bay Iron & Brass Works, Astoria, Ore., is experiencing a large demand from various points in the Pacific Northwest for the steel sheaves, iron, brass and bronze castings of which it makes a specialty. Before the end of the present year some additional machinery for the shop and foundry will be necessitated by the requirements of the business.

The Moline, Ill., Foundry Company, recently referred to in *The Iron Age*, has decided upon an addition, 40 x 100 ft., which will almost double its capacity. Considerable new apparatus is to be installed.

The Lima Contractors' Supply Company, Lima, Ohio, manufacturer of interlocking cast iron road culverts, has recently taken over the plant of the Delphos Foundry & Mfg. Company at Delphos, Ohio.

At the annual meeting of the Keystone Steel Foundry Company, Avonmore, Pa., Charles Biehl of Tarentum was elected president and general manager; James Sarvers, vice-president, and Jos. Wellersbacher, secretary and treasurer.

The plant of the Central Foundry Company at Bessemer, Ala., has been put in operation after a suspension for necessary repairs.

The Veitch-Matthews Company is asking for bids on a foundry building to be erected at Bessemer, Ala.

The Lufkin Foundry & Machine Company, Lufkin, Texas, managed by W. C. Trout, who designed considerable of the machinery now manufactured by Allis-Chalmers Company, is finding an extensive sale for its products, including power engines, at various points in the South and Southwest. During the year some extension of its shop facilities will undoubtedly be necessitated by current orders.

The Adolph Leitelt Iron Works, Grand Rapids, Mich., is erecting a two-story brick addition to its machine pipe shops.

The Moline Foundry Company, Moline, Ill., will erect an addition to its foundry in the spring, 40 x 100 ft., which will increase its floor space one-third and double the output of the concern.

The Acme Malleable Iron Works, Chattanooga, Tenn., is proceeding with plans for a foundry addition, which will be provided with the most modern equipment. All of the machinery that can be motor driven will be electrically operated.

A foundry and machine shop will probably be built and equipped this spring at Big Stone Gap, Va., by interests identified with the Eagle Iron Works, Norfolk, Va. Address the president, W. A. Edmonds.

Bridges and Buildings.

The Parkersburg, W. Va., Bridge Company has taken contract for the erection of a steel bridge over the Ohio River at that place.

The Standard Bridge Tool Company, Pittsburgh, has received a contract from the Mount Vernon Car Mfg. Company, Mount Vernon, Ill., for a Thomas automatic spacing table.

The Faris Bridge Company, Diamond Bank Building, Pittsburgh, has recently completed a highway toll bridge over the Kentucky River at Irvine, Estill County, Ky., which has reinforced concrete foundations and steel superstructure; cost about $25,000.

Power Plant Equipment.

The Camden Iron Works, Camden, N. J., has received contract for the construction and equipment of the new pumping station to be built by the city of Detroit, Mich., located on Fairview avenue, at its bid of $112,000.

The Platt Iron Works, Dayton, Ohio, has taken contract for the installation of a pump of 3,000,000 gal. daily capacity at Ft. Scott, Kan.

The Parker Boiler Company, Philadelphia, Pa., has recently received the following orders for boilers: Lehigh Valley Cold Storage Company, South Bethlehem, Pa., two 265-hp.; Abbott Alkoloidal Company, Chicago, Ill., one 262-hp.; Southern Colorado Power & Railway Company, Trinidad, Colo., four 605-hp.

The Standard Boiler & Plate Iron Company, Niles, Ohio, which recently completed a large addition to its plant, reports that orders continue to come in in good volume and its plant is being run on double turn, as it has been for some time past. The bulk of this company's work is oil tanks.

Fires.

The power house of the State Penitentiary, Joliet, Ill., suffered a loss of $100,000 by fire February 3.

Much machinery was ruined in the $50,000 fire in the Windsor Brick Company's plant at Akron, Ohio, February 3.

Fire destroyed the blacksmith shop of Hahn Brothers and the iron foundry of Confer, Smith & Co., Hamburg, Pa., February 4. The total loss is estimated at $50,000.

The Delaware River Steel Company's blast furnace plant at Chester, Pa., was damaged by fire February 7. The estimated loss is $100,000.

Fire destroyed the lumber yard and planing mill of Joseph M. Miles & Son, West Manayunk, Pa., February 4. The estimated loss is $200,000.

Hardware.

The Bigsby Mfg. Company, Cleveland, Ohio, has bought the eaves trough and conductor pipe business of the Thomas Steel Company, Niles, Ohio, including all of the machinery, fixtures and stock on hand, besides taking over all of that company's contracts, amounting to over 2,000,000 ft. Inasmuch as the Thomas Steel Company has been making eaves trough and conductor pipe less than two years, its machinery is practcially new and of the latest designs. This additional machinery will give the Bigsby Mfg. Company an annual capacity of 12,000,000 ft. of pipe and gutter.

Miscellaneous.

The H. W. Johns-Manville Company, manufacturer of asbestos and other materials and extensively engaged in the railroad supply business at 171-173 Randolph street, and with a large warehouse on Erie street, Chicago, has secured a 10-year lease of the four-story and basement building at 27-29 Michigan ave-

nue, where it will remove about March 1. Rapidly increasing business and the constant addition of new lines of materials, with the expectation that a consolidation of its offices and warehouse will greatly facilitate the handling of business and give more perfect satisfaction to customers, are the reasons given by the company for changing its location. The company will install its general offices and selling departments as well as a retail department and a spacious showroom on the first floor of its new quarters. The accounting department will be located on the second floor, and the remainder of the building will be utilized for storage purposes.

The Colgan Machine Works, Columbus, Ohio, is building a new type of concrete block machine which will be extensively put on the market in the near future.

The Lennox Machine Company, Marshalltown, Iowa, is reported to have decided upon extensive improvements in its plant, including the purchase of new machine tools and other apparatus.

The Sarven Wheel Company, Indianapolis, Ind., has installed machinery for the manufacture of automobile and motor truck wheels, and its capacity for this new line will be gradually extended.

The Fremont Mfg. Company, Fremont, Neb., will add some machine tools to its equipment, including lathes and drills.

The National Cash Register Company, Dayton, Ohio, will install some additional motors for machinery drive.

The Houston Blow Pipe & Sheet Metal Works has been incorporated at Houston, Texas, to operate a plant of the character indicated in its title.

The Continental Motor Mfg. Company, Muskegon, Mich., will build a new factory for which motor driven machine tools and other equipment will be required.

The plant of the Munro Steel & Wire Works, Ltd., Winnipeg, Man., which recently burned, will probably be rebuilt for considerably larger capacity.

Alan L. Jemison has organized at Birmingham, Ala., the Jemison Coal, Iron & Steel Company, the object of which is stated to be the construction and operation of furnaces, rolling mills and coal mines.

The La Plant Tool Company, Marshalltown, Iowa, organized by Geo. La Plant, has acquired a suitable shop and will install a large number of machine tools and other equipment. Planers, shapers, drills and lathes are understood to be in the list required.

A letter from Nacozari, Mexico, states that the American Smelting & Refining Company is preparing to build a new smelter at Tonichi, a few miles distant from that place, which will be equipped with the best modern machinery and operated with motors throughout.

The Carbondale Machine Company, Carbondale, Pa., is reported to contemplate the purchase of motors.

The Deming Company, whose probable future requirements were recently forecasted in *The Iron Age*, is reported to have definitely determined upon an addition to its works at Salem, Ohio, for the purpose of extending the manufacture of hydraulic rams.

The Industrial Automobile Company, Elkhart, Ind., will be reorganized and put on a sound financial basis, with possible enlargement of its facilities. A receiver is reported to be now in charge of the property.

The Superior Motor Vehicle Company, Buffalo, N. Y., J. Willard Lansing, president, 150 Michigan street, recently incorporated to manufacture auto trucks and commercial vehicles, has decided to build a more extensive plant than at first intended, having purchased additional land for the purpose. Three buildings will be erected: One 70 x 400 ft., two stories; one 70 x 500 ft., two stories, and an engine and boiler house. The plant will be located at Elmwood avenue and the New York Central Railroad Belt Line, opposite the Pierce-Arrow Motor Car Company's plant.

The Erd Motor Car Company, Saginaw, Mich., is having plans prepared for a factory, 90 x 160 ft., which it intends to erect in the spring.

The Detroit Radiator Company is having plans prepared for a new factory which it will erect next spring.

The tin plate mills of the Gas City, Ind., plant of the American Sheet & Tin Plate Company are again in operation after being idle for two years. There are 150 people on the day and night shifts.

The Maxwell-Briscoe Motor Company, Newcastle, Ind., employs nearly 2000 men and is endeavoring to get 200 more.

The Montpelier Handle Company, Montpelier, Ind., has been incorporated with $10,000 capital stock, to manufacture handles. The directors are Harry Channon, William R. Walton and Stanley C. French.

The Clark Motorcar Company, Shelbyville, Ind., has received its first large shipment of automobile bodies and will soon begin running day and night shifts in its new plant and will make 15 machines a day.

Price Schedule for Domestic Manganese Ore.

The Carnegie Steel Company's present schedule of prices for domestic manganese ores is based on 26 cents a unit of manganese, for ore containing above 49 per cent., and on 5 cents a unit for iron. The phosphorus requirements are more rigid than in some preceding schedules, the limit being 0.20 per cent., whereas at times the company has made no deductions for phosphorus unless the excess was above 0.25 per cent. The prices given below are for deliveries at Lucy furnaces at Pittsburgh, Edgar Thomson furnaces at Bessemer, Pa., or at South Works of the Illinois Steel Company, South Chicago, Ill. They are based on ores containing not more than 8 per cent. silica and not more than 0.20 per cent. phosphorus, and are subject to deductions as follows:

For each 1 per cent. in excess of 8 per cent. silica there shall be a deduction of fifteen (15) cents per ton, fractions in proportion.

For each 0.02 per cent. or fraction thereof in excess of 0.20 phosphorus there shall be a deduction of two (2) cents per unit of manganese per ton.

Prices per Unit.—Cents.

	Metallic manganese. Per cent.	Iron.	Manganese.
Ore containing above	49	5	26
Ore containing	46 to 49	5	25
Ore containing	43 to 46	5	24
Ore containing	40 to 43	5	23

Ore containing less than 40 per cent. manganese, or more than 12 per cent. silica or 0.225 per cent. phosphorus is subject to acceptance or refusal at buyer's option. Settlements are based on analysis of sample dried at 212 degrees F. The percentage of moisture in the sample as taken is deducted from the weight.

A Bond Issue by the Republic Iron & Steel Company.

A special meeting of the stockholders of the Republic Iron & Steel Company will be held in Jersey City, March 7, to act upon a proposal to authorize a mortgage of the company's properties to secure an issue of bonds to an aggregate amount not to exceed at any one time $25,000,000. Chairman John A. Topping in a circular to the stockholders says:

The purpose of the proposed bond issue is to place the company's finances for the future on a broader and more flexible basis. To accomplish this purpose it has been unanimously recommended by the Executive Committee that an issue of bonds be authorized; that the existing outstanding first mortgage bonds be refunded; that the outstanding mortgage notes of the Haselton Steel Tube Company be retired at maturity; that the remainder of the proposed issue of bonds be sold from time to time to provide funds for continuing the policy of the management, of diversifying production and extending the business of the company through the acquisition of additional property, development of mineral land, new construction and improvements and for other corporate purposes.

The immediate issue proposed is $10,000,000, 10 to 30 year 5 per cent. bonds, for which Hallgarten & Co. and J. & W. Seligman have contracted. Part of the plan is the refunding of the existing $7,767,000 first mortgage bonds callable in 1914. It is expected that holders of these bonds will be offered new bonds under terms of exchange yet to be announced. Upon the retirement of the existing first mortgage bonds the new mortgage becomes a first mortgage on all of the company's property.

The dynamo room, power house and engine house of the Delaware River Steel Company, at Chester, Pa., were seriously damaged by fire on the morning of the 7th inst., which necessitated the banking of the blast furnace, and there will be enforced idleness of the plant for probably 10 days. Just how badly the machinery has been damaged has not yet been determined.

Pig Iron Production.

A Slight Falling Off in January.

Weekly Capacity February 1 About 8700 Tons Less Than on January 1.

Our returns from the blast furnace companies show that pig iron production in January was slightly less than in December, also a month of 31 days, being 2,608,605 gross tons of coke and anthracite iron, against 2,635,680 tons. Weather conditions were against full outputs last month, railroads being hampered in a number of districts. The capacity active February 1 was 586,512 tons a week, against 595,216 tons a week on January 1, a decrease of 8704 tons. The number of furnaces in blast was the same on the two dates—313.

Daily Rate of Production.

The daily rate of production of coke and anthracite pig iron by months, beginning with January, 1909, is as follows:

Daily Rate of Pig Iron Production by Months.—Gross Tons.

	Steel works.	Merchant.	Total.
January, 1909	35,983	21,992	57,975
February	38,367	22,609	60,976
March	36,811	22,421	59,232
April	36,436	21,526	57,962
May	40,531	20,222	60,753
June	45,507	19,149	64,656
July	48,670	19,123	67,793
August	51,354	21,192	72,546
September	55,361	24,146	79,507
October	57,067	26,789	83,856
November	56,333	28,584	84,917
December	57,058	27,964	85,022
January, 1910	57,200	26,948	84,148

Production of Steel Companies.

Returns from all plants of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last are stated separately but are indicated in the first three columns of "total production."

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.—			Spiegeleisen and ferromanganese.	
	1908.	1909.	1910.	1909.	1910.
January	664,415	1,117,823	1,773,201	12,325	19,538
February	745,802	1,073,363	.....	10,046	.....
March	841,502	1,140,553	.....	23,743	.....
April	725,548	1,093,092	.....	22,478	.....
May	759,674	1,256,448	.....	20,834	.....
June	717,689	1,365,527	.....	16,516	.....
July	798,639	1,508,762	.....	17,613	.....
August	897,052	1,591,991	.....	22,313	.....
September	933,514	1,660,839	.....	28,148	.....
October	996,481	1,769,094	.....	25,384	.....
November	981,167	1,689,994	.....	23,376	.....
December	1,090,339	1,768,799	.....	20,791	.....

January Output by Districts.

The table below gives the production of all coke and anthracite furnaces in January and the four months preceding:

Monthly Pig Iron Production.—Gross Tons.

	Sept. (30 days)	Oct. (31 days)	Nov. (30 days)	Dec. (31 days)	Jan. (31 days)
New York	176,777	184,075	178,783	166,725	172,260
New Jersey	29,703	32,778	36,444	35,711	28,856
Lehigh Valley	62,332	68,339	66,703	65,951	62,601
Schuylkill Val.	52,234	56,251	56,463	57,585	60,624
Lower Susquehanna and Lebanon Val.	69,252	75,542	71,463	75,737	69,413
Pittsburgh Dis.	548,968	594,652	573,439	617,952	603,261
Shenango Val.	154,614	164,564	157,984	157,901	159,418
West. Penn	125,712	140,338	139,168	146,732	141,495
Md., Va. and Kentucky	64,652	74,327	75,661	75,450	72,425
Wheeling Dis.	126,077	139,832	135,274	139,496	124,556
Mahoning Val.	211,979	220,093	232,230	233,147	232,381
Central and North. Ohio	187,366	213,585	208,559	217,217	217,681
Hocking Valley, Hanging Rock and S.W.Ohio.	30,628	39,921	42,735	48,163	49,658
Mich.,Minn.,Mo., Wis., Colo	62,601	68,709	62,088	67,626	70,989
Chicago Dis.	300,261	316,673	284,725	314,634	333,892
Alabama	154,353	175,892	184,291	177,568	170,143
Tennessee, Georgia and Texas	27,697	33,970	41,498	38,085	38,952
Totals	2,385,206	2,599,541	2,547,508	2,635,680	2,608,605

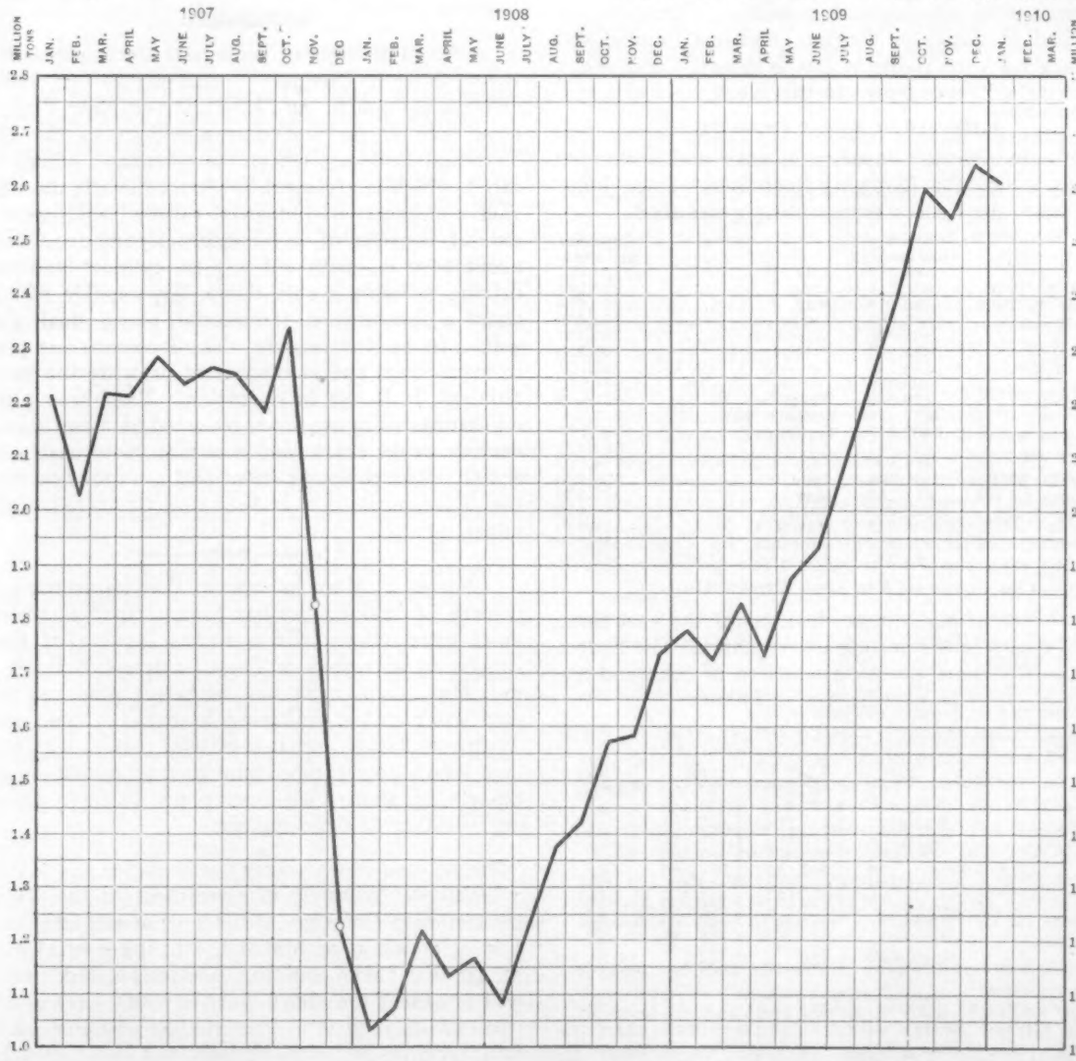

Diagram of Coke and Anthracite Pig Iron Production in the United States from January, 1907, to January, 1910, Inclusive.

Capacity in Blast February 1 and January 1.

The following table shows the weekly capacity of furnaces in blast February 1 and January 1, the furnaces blown in in January being rated on the records of previous performance:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	February 1. Number in blast.	February 1. Capacity per week.	January 1. Number in blast.	January 1. Capacity per week.
New York:					
Buffalo	16	16	36,465	15	34,968
Other New York	7	3	3,416	2	2,884
New Jersey	8	5	6,517	5	6,440
Spiegel	2	0	0	0	0
Pennsylvania:					
Lehigh Valley	23	15	13,792	16	15,185
Spiegel	3	2	546	2	742
Schuylkill Valley	15	11	14,364	9	12,153
Low. Susquehanna	7	7	8,271	6	8,905
Spiegel	1	0	0	1	635
Lebanon Valley	10	9	7,406	9	7,910
Pittsburgh Dist.	48	47	131,901	47	136,948
Spiegel	3	1	875	3	2,525
Shenango Valley	20	18	35,987	18	35,452
Western Penn.	27	19	31,339	20	33,585
Maryland	4	3	6,436	3	6,115
Wheeling Dist.	14	12	28,126	12	30,842
Ohio:					
Mahoning Valley	22	21	54,124	20	52,647
Cent. and North	21	20	49,154	20	49,049
Hocking Val., Hanging Rock and S. W. Ohio	15	12	11,214	12	10,878
Illinois	31	28	74,065	29	73,105
Spiegel	2	2	1,337	1	750
Michigan, Wisconsin and Minnesota	9	8	8,873	8	8,604
Colorado, Missouri and Washington	7	4	7,162	4	6,925
The South:					
Virginia	23	11	8,472	11	8,666
Kentucky	5	1	1,450	1	1,463
Alabama	46	26	36,729	26	39,530
Tennessee	18	12	8,491	12	8,015
Georgia and Texas.	4	0	0	1	295
Totals	411	313	586,512	313	595,216

Among furnaces blown in in January were Lackawanna No. 5 at Buffalo, Northern in New York, Tidewater in the Schuylkill Valley and one, Haselton, in the Mahoning Valley. Among furnaces blown out in the month were one Duquesne and one Lucy in the Pittsburgh District, Colonial in western Pennsylvania, West End (banked) in Virginia, and one Pioneer and one Woodstock in Alabama. At Hubbard, Ohio, No. 1 furnace, rebuilt, was blown in this week.

A Record of Active Capacity.

The active weekly capacity in coke and anthracite iron has shown the following fluctuations since January 1, 1907, the figures representing gross tons:

	Capacity per week.		Capacity per week.
February 1	586,512	July 1	264,452
January 1, 1910	595,216	June 1	259,284
December 1, 1909	598,216	May 1	268,674
November 1	593,608	April 1	264,890
October 1	565,606	March 1	267,437
September 1	525,037	February 1	241,925
August 1	488,742	January 1, 1908	235,152
July 1	463,029	December 1, 1907	347,372
June 1	446,096	November 1	491,436
May 1	412,010	October 1	511,397
April 1	409,217	September 1	507,768
March 1	420,807	August 1	513,471
February 1	414,497	July 1	528,170
January 1, 1909	401,994	June 1	523,220
December 1, 1908	381,102	May 1	524,538
November 1	362,685	April 1	496,456
October 1	337,925	March 1	511,035
September 1	313,112	February 1	492,359
August 1	284,590	January 1, 1907	507,397

The Curve of Pig Iron Production.

The curve of pig iron production for the past three years is shown in the accompanying chart. The figures plotted in the chart, giving production of coke and anthracite pig iron by months, are as follows:

Production of Coal and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.

	1907.	1908.	1909.	1910.
January	2,205,607	1,045,250	1,797,560	2,608,605
February	2,045,068	1,077,740	1,707,340	.....
March	2,226,457	1,228,204	1,832,194	.....
April	2,216,558	1,149,602	1,738,877	.....
May	2,295,505	1,165,688	1,883,330	.....
June	2,234,575	1,092,131	1,930,866	.....
July	2,255,660	1,218,129	2,103,431	.....
August	2,250,410	1,359,831	2,248,930	.....
September	2,183,487	1,418,998	2,385,206	.....
October	2,336,972	1,567,198	2,599,541	.....
November	1,828,125	1,577,854	2,547,508	.....
December	1,234,279	1,740,912	2,635,680	.....

The United States Motor Company has been incorporated under the laws of New York with an authorized capital of $16,000,000, half common and half preferred stock, to consolidate a number of large automobile interests. Benjamin Briscoe and J. D. Maxwell of the Maxwell-Briscoe Motor Company are taking a prominent part in the affairs of the new company, but it is stated by the latter company that the consolidation will not affect the future policy of the Maxwell-Briscoe Company. Just what automobile manufacturing concerns will be consolidated has not as yet developed, and it is stated by those interested in the movement that their plans have not matured enough to allow of any announcement as to the parties participating. It is stated, however, that the new incorporation will manufacture automobiles and automobile sundries on a large scale. Most of the preferred stock, it is announced, has been underwritten.

Railroad Equipment Orders.—The Pennsylvania Railroad has placed an order for 50 locomotives with the Baldwin Locomotive Works, the demand upon its shops being quite beyond its ability to meet. The St. Paul has authorized the building of 25 switching locomotives in its own shops. The New York, Ontario & Western is in the market for 6 locomotives, the New Haven for 10 and the Baltimore & Ohio for a number not stated. Among car orders are the following: 300 gondolas for the New York, Ontario & Western, placed with the American Car & Foundry Company; 400 for the Rock Island, placed with the Rodger Ballast Car Company; 2000 for the Boston & Maine, placed with the Laconia Car Company; 100 for the Swift Refrigerator Transportation Company, placed with the Haskell & Barker Car Company. The Missouri, Kansas & Texas is in the market for 2150 cars, the National Railways of Mexico for 600 and the Denver, Laramie & Northwestern for 150.

A Novel Exhibit of Industrial Rolling Stock.—The Ernst Wiener Company, manufacturer of industrial railroad equipment, 50 Church street, New York, has a novel exhibit on the concourse floor of the Hudson Terminal Building, where the company's offices are located, which is arranged to attract the attention of possible purchasers of industrial railroad equipment. The exhibit consists of a miniature locomotive, weighing about 1500 lb., with 2¼ x 3 in. cylinder and 10¾-in. driving wheels; a side dump car, capable of holding about a square yard of material, and a small flat car, 3 ft. 4 in. by 5 ft. in size. The locomotive is practical in every way, and is capable of drawing the two cars, although it is not in operation. The three pieces of miniature rolling stock are mounted on a section of very narrow gauge track, and a miniature turntable is also shown. The company states that a number of inquiries they have received have been directly traced to the exhibit.

Charles T. Main announces that on account of the growth of business he has been obliged to move into more commodious offices, rooms 817-833 of the new Boston Safe Deposit & Trust Company Building, Boston, Mass., where he will be better prepared to conduct work in the following branches of engineering: Textile mills and other industrial plants, water power and steam power development, and examination and reports of plants, with reference to their value, reorganization or development.

Paul W. Webster, vice-president of the Treadwell Construction Company, builder of steel plate construction, with works at Midland, Pa., has opened an office at 448 Equitable Building, Baltimore, Md., where he will represent the above and the other Treadwell companies with a general line of iron and steel construction, forgings and crucible steel and iron castings.

The Iron and Metal Trades

Slight Decrease in Pig Iron Output.

The Steel Corporation Negotiating for Bessemer Iron.

The most significant development in the pig iron market is the negotiation between the United States Steel Corporation and the Mahoning and Shenango Valley furnace companies for a round tonnage of Bessemer iron for delivery in March, April and May. Such a purchase would have a beneficial effect on the drooping market for steel making iron. Because of the heavy driving of months a number of the Steel Corporation's furnaces must soon go out for repairs.

Direct returns from the blast furnace companies to *The Iron Age* show a slight falling off in January from the pig iron production of December, or from 2,635,680 gross tons of coke and anthracite iron to 2,608,605 tons. The steel works furnaces did a little better in January, advancing from 57,058 tons a day in December to 57,200 tons. The merchant furnace product fell off over 1000 tons a day, or from 27,964 tons in December to 26,948 tons last month. Capacity active February 1 was 586,512 tons a week, against 595,216 tons a week January 1, a decrease of 8704 tons. The number of furnaces in blast is unchanged at 313. Partial stock returns indicate slight increases in some districts, while in others January shipments practically balanced output.

The pig iron market has settled further into dullness, negotiations for the second half of the year having been cut off sharply in many cases. The chief activity has been in Virginia iron, which makers continue to move at low prices for Eastern delivery.

Chicago reports that the buying of malleable pig iron, which in January was between 75,000 and 100,000 tons, has about run its course. Toward the end of the movement sales for the last half of the year were made at prices close to those for nearby delivery.

The structural trade continues to show well distributed activity. Large numbers of buildings of moderate size are under contract or about to be placed. The Rockefeller Building at Cleveland, 3000 tons, and the Great Northern ore dock at Superior, Wis., 9000 tons, have been awarded in the past week. Prices of structural shapes have yielded somewhat, and large orders are taken at 1.50c., Pittsburgh. In some other finished lines prices are easier, but without specific declines.

Railroad inquiry is sporadic. Bridge and rail business are light, but several good car orders have been placed, and inquiries are now out for about 25,000, including large lots for the Baltimore & Ohio and the Southern Railway. The latter is also in the market for rails.

Agricultural machinery and implement works are turning out an unprecedented product. Mills are being pressed for deliveries of every form of material entering into agriculture.

Eastern plate mills are interested in an inquiry for three steel steamers for the Gulf trade.

A Philadelphia syndicate is reported to have bought from the Government the entire accumulation of old material in Panama at $17.20, delivered at New York. The price points to expected salvage as an important factor in the transaction. Heavy melting scrap is lower and in eastern Pennsylvania $16.50, delivered, has been reached.

The coke market shows signs of distress, prompt coke having been sold below $2, at ovens. A movement to curtail output is under way.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 9, 1910.	Feb. 2, 1910.	Jan. 12, 1910.	Feb. 10, 1909.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	*$18.75*	$18.75	$19.00	$17.00
Foundry No. 2, Southern, Cincinnati	17.25	17.25	17.25	16.25
Foundry No. 2, local, Chicago	19.00	19.00	19.00	17.00
Basic, delivered, eastern Penn.	*18.50*	18.50	18.75	16.75
Basic, Valley furnace	*16.50*	16.50	17.00	15.25
Bessemer, Pittsburgh	*19.65*	19.90	19.90	16.90
Gray forge, Pittsburgh	*17.15*	17.15	17.40	15.15
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	27.50	27.50	27.50	25.00
Forging billets, Pittsburgh	**32.00**	31.00	31.00	27.00
Open hearth billets, Philadelphia	30.60	30.60	30.60	26.20
Wire rods, Pittsburgh	33.00	33.00	33.00	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	*16.50*	17.00	17.25	14.50
Steel rails, melting, Philadelphia	*16.50*	17.00	17.00	15.50
Iron rails, Chicago	*19.00*	20.00	20.00	18.25
Iron rails, Philadelphia	*20.00*	20.50	20.50	19.00
Car wheels, Chicago	*18.00*	18.00	18.50	15.25
Car wheels, Philadelphia	*16.75*	17.00	17.50	15.50
Heavy steel scrap, Pittsburgh	*17.50*	17.50	17.75	15.50
Heavy steel scrap, Chicago	*15.50*	16.00	16.00	13.50
Heavy steel scrap, Philadelphia	*16.50*	17.00	17.00	15.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	*1.60*	1.65	1.65	1.50
Common iron bars, Chicago	1.60	1.60	1.60	1.50
Common iron bars, Pittsburgh	1.70	1.70	1.70	1.50
Steel bars, tidewater, New York	1.66	1.66	1.66	1.56
Steel bars, Pittsburgh	1.50	1.50	1.50	1.46
Tank plates, tidewater, New York	1.71	1.71	1.71	1.76
Tank plates, Pittsburgh	1.55	1.55	1.55	1.60
Beams, tidewater, New York	*1.66*	1.71	1.71	1.76
Beams, Pittsburgh	*1.50*	1.55	1.55	1.60
Angles, tidewater, New York	*1.66*	1.71	1.71	1.76
Angles, Pittsburgh	*1.50*	1.55	1.55	1.60
Skelp, grooved steel, Pittsburgh	1.50	1.50	1.50	1.45
Skelp, sheared steel, Pittsburgh	1.60	1.60	1.60	1.50
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.40	2.40	2.40	2.50
Wire nails, Pittsburgh*	1.85	1.85	1.85	1.95
Cut nails, Pittsburgh	*1.80*	1.80	1.85	1.75
Barb wire, galv., Pittsburgh*	2.15	2.15	2.15	2.40
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	*13.75*	13.87½	14.12½	13.50
Electrolytic copper, New York	*13.50*	13.62½	13.87½	13.25
Spelter, New York	*6.12½*	6.12½	6.25	5.05
Spelter, St. Louis	*5.87½*	5.90	6.12½	4.90
Lead, New York	*4.70*	4.70	4.70	4.10
Lead, St. Louis	*4.55*	4.60	4.65	3.92½
Tin, New York	*32.60*	32.60	32.85	28.45
Antimony, Hallett, New York	8.25	8.25	8.25	8.00
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.84	$3.84	$3.84	$3.89

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.; New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.50c. to 1.55c., net; I-beams over 15 in., 1.65c., net; H-beams over 8 in., 1.75c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.60c., net; angles over 6 in., 1.65c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.75c., base, half extras, steel bar card; tees, 3 in. and up, 1.65c., net; zees, 3 in. and up, 1.60c., net; angles, channels and tees, under 3 in., 1.50c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.80c., net; hand rail tees, 2.80c., net; checkered and corrugated plates, 2.80c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.55c. to 1.60c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates.

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated Feb-

ruary 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Black annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 1.95c. Box annealed sheets, Nos. 17 to 21, 2.20c.; Nos. 22 to 24, 2.25c.; Nos. 25 and 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.40c.; No. 29, 2.45c.; No. 30, 2.55c. Galvanized sheets, Nos. 13 and 14, 2.50c.; Nos. 15 and 16, 2.60c.; Nos. 17 to 21, 2.75c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3.10c.; No. 27, 3.30c.; No. 28, 3.50c.; No. 29, 3.60c.; No. 30, 3.85c. Painted roofing sheets, No. 28, $1.70 per square. Galvanized roofing sheets, No. 28, $3 per square, for 2½-in. corrugations.

Wrought Pipe.—The following are the discounts on the Pittsburgh basing card on carloads of wrought pipe which went into effect January 1:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ in.	70	54	65	..
⅜ in.	71	57	66	52
½ in.	74	62	69	57
¾ to 6 in.	78	68	73	63
7 to 12 in.	72	57	67	52
Plugged and Reamed.				
1 to 4 in.	76	66	71	61
Extra Strong, Plain Ends.				
⅛ to ⅜ in.	63	51	58	46
½ to 4 in.	70	58	65	53
4½ to 8 in.	66	54	61	49
9, 10, 11 and 12 in.	54	42	..	..
Double Extra Strong, Plain Ends.				
½ to 8 in.	59	48	54	43

The above steel pipe discounts are for "card weight," subject to the usual variation of 5 per cent.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 3 in.	69	55
6 to 13 in.	60	43

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discount for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $33.

Steel Rivets.—Structural rivets, 2.15c., base; boiler rivets, 2.25c., base, subject to usual extras.

Pittsburgh.

PARK BUILDING, February 9, 1910.—(*By Telegraph.*)

Pig Iron.—There are no inquiries of any moment in the market and prices are weak. There are reports that a large block of Bessemer iron may be sold this week to a leading steel producer, and if this is done it may have a beneficial effect on a market which certainly needs some stimulus. We quote Bessemer iron at $18.75, Valley furnace, but on a firm offer it is probable that $18.50 could be done. We quote basic at $16.50; No. 2 foundry, $16.75, and gray forge, $16.25, all at Valley furnace, the freight rate to the Pittsburgh District being 90c. a ton. A sale of 1000 tons of basic iron for prompt shipment has been made by a dealer to a local consumer at a remarkably low price, but some unusual conditions were attached to the sale.

Steel.—The supply of Bessemer steel billets and sheet and tin bars is more plentiful and prices are easier. In open hearth steel, however, there is still a great scarcity particularly in small billets and forging billets, which command very high prices for prompt shipments. We quote 4 x 4 in. Bessemer billets at $27.50; sheet and tin bars rolled from Bessemer stock, $28.50; 4 x 4 in. open hearth billets, $28.50 to $29, and open hearth sheet and tin bars, $29. Small sizes bring from $30 to $31 and forging billets, $32 to $33, Pittsburgh.

(*By Mail.*)

The hesitation in the steel trade which started in December has steadily increased, and there is now a feeling that after all the year 1910 may not prove to be as big a year as was generally anticipated. The railroads are not buying equipment, even though badly needed, because of the unfriendly attitude at Washington, and the general consumer is not in the market because he is pretty well stocked up, a large part of the heavy shipments by the mills in November and December being still in stock and sufficient to meet consumptive demands for some time yet. Another thing that is holding back trade to some extent is the inclement weather, which has continued for about two months and has practically shut off all outside building operations. With the return of good weather and the uncertain situation at Washington cleared up, it is believed that conditions would soon show material betterment. The halt in buying, together with the present enormous production, is reflected in prices which are soft. Pig iron is weak and lower; steel is fairly strong, but consumers mean to go slow in making contracts, and on some finished products premiums for prompt shipments are disappearing. The sale of 6000 tons of basic pig iron to a Canton steel interest for last half of the year delivery at a price equal to $16.75, at Valley Furnace, indicates that some of the furnaces are willing now to book contracts for iron over this year at prices they would have turned down a month or two ago. There have been no sales of Bessemer iron of any amount for several months; while $19 is the nominal figure, there is no doubt that $18.50 and perhaps lower can be done if any business was offering. Large steel interests are out of the market as buyers of Bessemer iron. There have been no specific declines in prices of finished iron and steel, but the general market is showing an easier tone. In the heavy lines, such as plates, structural shapes, pipe and bars, the mills are pretty comfortably filled for the next several months, while in sheets and tin plate and wire products the situation is very satisfactory. The coke trade is showing signs of distress, and standard grades of furnace coke for prompt shipment have sold at $2 per net ton or lower. The scrap trade continues quiet, but consumption is fairly heavy, and no large lots are pressing the market for prompt sale; for this reason prices are being fairly well maintained.

Ferromanganese.—New inquiry is rather light, and is mostly in small lots for prompt shipment. We note a sale of two large cars, ranging from 60 to 80 tons, one car for February and one for March, at $44, Baltimore, or $46.30, delivered, Pittsburgh. This price represents the market, but possibly it could be shaded 50c. a ton on large lots. Foreign, 80 per cent., for delivery over the last half is held at about $45, seaboard, but there is no inquiry for such delivery.

Ferrosilicon.—Consumers are pretty well covered, and as a result there is little new inquiry and only for small lots for prompt shipment. Prices are fairly steady; we quote 10 per cent. at $23.90; 11 per cent., $24.90; 12 per cent., $25.90, and 50 per cent., $62 to $62.50, Pittsburgh, for prompt shipment.

Muck Bar.—The only active inquiry of moment for some little time was one last week for 200 tons, taken by a local producer on the basis of $30.50, Pittsburgh. We quote best grades of muck bar in random lengths at $30 and short bars at $30.50, f.o.b. Pittsburgh.

Rods.—One of the leading makers of rods has not been in the market as an active seller for some little time, needing its entire output for its own wire mills, and the supply of rods available for the open market is limited. Large consumers are pretty well covered up to July 1, and are specifying freely against their contracts. We continue to quote Bessemer, open hearth and chain rods at $33 to $34, f.o.b. Pittsburgh.

Skelp.—The market is quiet, but the mills are pretty comfortably filled for the next six weeks or two months and have not reached the position where they will shade prices to secure tonnage. We quote as follows: Grooved steel skelp, 1.50c. to 1.55c.; sheared steel skelp, 1.60c. to 1.65c.; grooved iron skelp, 1.75c. to 1.80c., and sheared iron skelp, 1.90c., all for ordinary width and gauges, f.o.b. Pittsburgh.

Steel Rails.—The Baltimore & Ohio order totaled 78,800 tons, of which the Carnegie Steel Company got 24,850 tons. This company has also received a good many small orders

for rails ranging from 250 to 1000 tons, footing up probably 8000 tons of standard sections altogether. It also received new orders last week for 3478 tons of light rails. The three rail mills at Edgar Thomson are now assured of work for several months at their present rate of operation, which is probably 50 per cent. of capacity. We quote steel axles at 1.75c. to 1.80c. and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., $32; 12 to 14 lb., $29; 16, 20 and 25 lb., $28; 30 and 35 lb., $27.75, and 40 and 45 lb., $27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at $28, at mill.

Plates.—Two Atlantic Coast Line trading boats in the market and several other smaller boats will require a considerable tonnage in plates. The steel car companies are still specifying heavily for plates, but with the holding off in placing of new orders for cars, the outlook for consumption from this class of consumers is not as good as it was some time ago. All the leading plate mills are pretty well filled up for the next two or three months, and they report a fair demand from boiler shops and other consumers. The plates for the Brooklyn water works extension, about 6800 tons, have not yet been awarded, but will likely come to a local mill. The market is firm, and we quote ¼-in. and heavier plates at 1.55c. in large lots and 1.60c. to 1.65c. in small lots for prompt shipment.

Structural Material.—The largest contract of the week is for an ore dock to be built by the Great Northern Railroad, 9000 tons, placed with the American Bridge Company, the material to be rolled by the Carnegie Steel Company. The McClintic-Marshall Construction Company has taken 400 tons for a new bridge for the West Side Belt Railroad, to connect with the Pittsburgh & Lake Erie Railroad, and bids are going in for about 500 tons for the Mahoning National Bank's new building at Youngstown, Ohio. A good many small jobs are being placed, and the fabricating interests are pretty well filled up with work for three or four months. Deliveries of material by the mills are still irregular and not satisfactory. There is a softer tendency in prices, and we quote beams and channels up to 15-in. at 1.50c., at mill, for desirable orders, but this is absolute minimum, small lots bringing 1.55c. to 1.60c., at mill.

Tin Plate.—The tin plate mills are now busy filling specifications against contracts from the meat packers and other consumers which are coming in liberally. A number of the leading tin plate mills have sold practically their entire output up to July 1. It is believed that 1910 will be the best year the tin plate trade has ever seen in point of consumption. Prices are firm and we continue to quote 100 lb. cokes at $3.60 per base box, f.o.b. Pittsburgh, for delivery up to July 1.

Sheets.—The demand has shown a slight falling off, but this is rather welcomed by the mills, as it will give them a chance to catch up on orders, as they are from two to three months behind. The demand for electrical and blue annealed sheets continues quite heavy, and on these grades mills that are able to make prompt shipments can usually obtain premiums of $1 to $2 a ton. Regular prices are as follows: Blue annealed sheets, Nos. 3 to 8, 1.70c.; Nos. 9 and 10, 1.75c.; Nos. 11 and 12, 1.80c.; Nos. 13 and 14, 1.85c., and Nos. 14 and 15, 1.95c.; one-pass box annealed No. 28 black sheets, 2.40c., and No. 28 galvanized, 3.50c., at mill. We quote corrugated roofing sheets at $1.70 per square for painted and $3 for galvanized, 2½-in. corrugations. Jobbers charge the usual advances over these prices for small lots from store.

Bars.—Both iron and steel bars show a slight falling off in new demand, but specifications against contracts are as heavy as ever, and the mills are not catching up on back deliveries to any extent. Prices are firm, and the whole bar market is regarded as being in very satisfactory condition. Several of the leading makers of steel bars have very little tonnage to spare for delivery this side of July 1. On contracts for delivery through first and second quarters several of the leading steel bar mills are naming 1.45c., at mill, but for prompt shipment 1.50c. to 1.55c. is being quoted. Iron bars are held at about 1.70c., Pittsburgh.

Hoops and Bands.—A fair amount of new business is being placed, but specifications against contracts are not coming in so freely as they did in the last two months of last year. We quote steel hoops for forward delivery at 1.50c. to 1.60c., and for prompt shipment at 1.60c. to 1.65c., at mill. Steel bands are 1.45c. to 1.50c., on contracts, and from 1.60c. to 1.65c. for prompt shipment.

Spelter.—There was a break last week in prices of spelter of fully ¼c. a pound, and prime grades of Western were sold at 5.62½c. and in one case at 5.60c., East St. Louis. The market then firmed up a little, and to-day best grades are held at about 5.65c., East St. Louis, equal to 5.75½c., Pittsburgh. Possibly on a firm offer for a good sized tonnage and spot delivery, 5.60c., East St. Louis, might be done.

Spikes.—There has been practically no new buying of spikes by the railroads for some time, the Eastern roads having placed their contracts late last year for delivery up to July 1, while the Western roads have pretty well covered their requirements for all of this year. The spike makers are quite well filled up with contracts through the next four or five months, and the market is fairly strong. We quote standard sizes of railroad spikes, 4½ x 9-16 and larger, at $1.70 for Western shipment and $1.75 for local trade. Boat spikes are firm at $1.75, base, and small railroad spikes at $1.75, base. These prices are for carload and larger lots.

Shafting.—New orders for shafting are coming in well and specifications against contracts are liberal, shipments by the leading makers being quite heavy at present. The market is firm, discounts being 55 per cent. off in carloads and 50 per cent. in less than carloads, delivered in base territory.

Rivets.—The situation is quiet. The new demand is light and contracts placed some time ago are pretty well cleaned up. Prices are fairly firm, and we quote: Structural rivets, ¾-in. and larger, 2.15c., base; cone head boiler rivets, ¾-in. and larger, 2.25c., base; ⅝-in. and 11-16-in. take an advance of 15c., and ½-in. and 9-16-in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill. The above prices are absolutely minimum on contracts for large lots, makers charging the usual advances of $2 to $3 a ton to the small trade.

Wire Products.—As one maker of wire nails puts it, "the country is practically frozen up" and has been for two months, causing an almost complete shutdown in building operations, and as a natural result the demand for wire nails and other products going into new construction is quiet. Some contracts are on the books of the mills at the $1.80 basis, and specifications against these are coming in pretty well. The market is strong, and it is stated that regular prices are being maintained. We quote wire nails at $1.85 in carload and larger lots; painted barb wire, $1.85; galvanized, $2.15; annealed fence wire, $1.65; galvanized, $1.95, and cut nails, $1.80, all f.o.b. cars, Pittsburgh, usual terms, will full freight to destination added.

Merchant Pipe.—Specifications against contracts in January for merchant pipe were larger than expected, but were not as heavy as in December. There is a fair amount of new buying, and prospects for the pipe trade this year are reported as very bright. The Philadelphia Company has placed an order for 5800 tons of iron pipe for its requirements this year, divided among three mills, and the Consolidated Gas Company of Kane, Pa., has placed an order for 30 miles of 10-in. and 12 to 15 miles of 6-in. pipe for a gas line, the business going to the La Belle Iron Works, Steubenville, Ohio. Nothing further has been heard from the inquiry of the Arkansas Natural Gas Company for about 200 miles of large pipe, but it is still working on its plans. Prices are firm, discounts printed elsewhere in this issue being well maintained.

Boiler Tubes.—Only small orders for tubes are being placed by the railroads, the expected heavy demand not having materialized. In fact, it is known that quite a number of railroad orders for tubes are held up owing to the unfavorable attitude at Washington. The demand for merchant tubes is fair, but mostly for small lots. It is stated that regular discounts are being well maintained.

Iron and Steel Scrap.—This trade continues quiet, consumers being pretty well covered, and not inclined to take in large tonnages unless at very favorable prices. Bids for the Pennsylvania Railroad scrap closed on the 8th inst., and the allotments will be made on the 11th. Several local consumers of heavy steel scrap have bid $17.25, Pittsburgh, on the list. Dealers quote about as follows: Heavy steel scrap for Steubenville, Follansbee, Sharon, Monessen and Pittsburg delivery, $17.50, with reports of sales at $17.25. On other grades prices are about as follows: No. 1 foundry cast, $16.75 to $17; No. 2, $15.75 to $16; bundled sheet scrap, $15 to $15.25, at point of shipment; rerolling rails, $18.25 to $18.50, for delivery at Newark and Columbus, Ohio, and Cumberland, Md.; No. 1 railroad malleable scrap, $16 to $16.25; grate bars, $12.75 to $13; low phosphorus melting stock, $21; iron axles, $26.50 to $27; steel axles, $21 to $21.25; locomotive axles, $27.75 to $28; No. 1 busheling scrap, $15.25 to $15.50; No. 2, $11.75 to $12; old car wheels, $17 to $17.25; sheet bar crop ends, $18.25 to $18.50; cast iron borings, $10.25 to $10.50, and machine shop turnings, $12.25 to $12.50, all per gross ton, f.o.b. Pittsburgh, unless otherwise noted. We note sales of about 600 tons of heavy steel scrap at $17.50, delivered.

Coke.—A slump has occurred in prices of furnace and foundry coke for spot shipment. Standard makes of furnace coke loaded on cars which had to be moved have been sold as low as $2, and in some cases less, per net ton, at oven. This, however, should not be taken as the criterion of the market, as these were practically forced sales. The output of coke is running very close to 475,000 net tons per week, and in the absence of new demand it is but natural that prices should show a decline.

On February 15 the Ohio Iron & Metal Company, with offices in New York, Chicago and St. Louis, will open offices

in rooms 2124-2125 Farmers' Bank Building, Pittsburgh, in charge of H. D. Stalnaker, manager, and will carry on a general business in iron and steel scrap of all kinds. Mr. Stalnaker for some time has been connected with the Stalnaker Iron Company, dealing in iron and steel scrap, and previous to that was for some years representative in Pittsburgh of Wilkoff Brothers Company, Youngstown, Ohio, dealer in scrap.

Chicago.

FISHER BUILDING, February 9, 1910.—(*By Telegraph.*)

There is no slackening in the efforts of buyers to obtain materials for spring trade, and in many lines there is keen disappointment among industries which will not obtain enough steel to take care of the business offered them. The West is prosperous and all the industries which have any connection with agriculture are in a stronger position than ever before. Structural business is coming forward more freely, the business closed last week showing a gain, while inquiries from Western territory exceed expectations. The Western mills are so far behind on deliveries of soft steel bars that they are reluctant to give information on the question, but buyers who want to place new business find they must wait four to six months if their orders take the regular course. Some new business is making its appearance in bars, going principally to Eastern mills. Inquiries for concrete bars are particularly good, one purchaser being in the market for 3000 tons. The Western plate mills have turned away attractive business because they were unable to take care of it. Buyers of blue annealed sheets have to pay a premium for reasonably prompt delivery, and in wire products the mills are unable to satisfy the urgent demand from the industrial trade and the fence fabricators. The railroads are specifying freely on their contracts for track supplies as well as for bar iron, and on the whole specifications since the first of the year have been heavier than was anticipated and on a scale that proves embarrassing to the mills. The railroads are placing little or no new business, and the car builders and equipment industries find that they will have to wait until the political clouds have passed before they can share in the general prosperity of the country. The political embargo which has been placed on the purchasing departments of the railroads seems to have had no influence at all on the strength of the steel market, although it has depressed scrap and may have checked business that would have come forward in the pig iron market. If this embargo remains in effect long enough it may weaken bar iron, which is sold principally to railroads, but apparently it would have to be maintained for several months to make any impression on the steel industry, especially since the Western rail mills already have on their books a comfortable year's business, as well as specifications in excess of their ability to supply track material. Those who watch the stock market are somewhat unsettled as to the future of business conditions, but political agitation has had little effect on the whole on business conditions in the West, as the area subject to its influence is limited.

Pig Iron.—The buying movement in malleable Bessemer has about run its course, practically all of the malleable foundries in the West having purchased liberally for the last half. In many cases the business done by purchasers has exceeded the amounts inquired for. The larger buyers have divided their tonnage and followed a secretive policy regarding the amount actually closed, but it is estimated that purchases in this territory the past month amount to 75,000 to 100,000 tons, including several lots of charcoal malleable of 1000 and 2000 tons each. At the beginning of this movement the furnaces asked a premium for last half delivery, but gradually relaxed this effort and most of the business taken for last half is at current price. Owing to the light demand for foundry grades, the malleable buyers had the market to themselves and the policy they followed was successful in keeping the furnace interests in the dark as to the amount being purchased. A little business is being done in Southern foundry iron for second and third quarter as well as for last half. The orders come principally from general foundries and manufacturing interests identified with the agricultural trade. The political embargo of the railroads which has taken their purchasing departments out of the market for foundry products has undoubtedly had a dampening effect on the demand for pig iron, as many of the furnaces expected a buying movement by this time in Southern foundry grades. A fair amount of Southern iron was sold in January, and buyers are coming forward from day to day with inquiries for lots of 100 to 1000 tons. The leading Southern furnace interests are making little effort to sell, as they apparently have more confidence in the future than many of their customers, but there is a little pressure to sell spot iron as well as first half. Foundries seem to be generally well covered for the first half and until they understand the business situation better there is not much disposition to buy for last half. No large inquiries are reported, but it is understood a considerable tonnage of Southern iron is being delivered to Chicago interests which have not been open buyers. There is no change in the general level of prices, the concessions reported being as a rule the usual prices on analysis iron. The following quotations are for February and March delivery, f.o.b. Chicago:

Lake Superior charcoal	$19.50 to $20.00
Northern coke foundry, No. 1	19.50 to 20.00
Northern coke foundry, No. 2	19.00 to 19.50
Northern coke foundry, No. 3	18.50 to 19.00
Northern Scotch, No. 1	19.00 to 19.50
Southern coke, No. 1	18.85 to 19.35
Southern coke, No. 2	18.35 to 18.85
Southern coke, No. 3	17.85 to 18.35
Southern coke, No. 4	17.60 to 18.10
Southern coke, No. 1 soft	18.85 to 19.35
Southern coke, No 2 soft	18.35 to 18.85
Southern gray forge	17.35 to 17.85
Southern mottled	17.10 to 17.60
Malleable Bessemer	19.00 to 19.50
Standard Bessemer	21.40 to 21.90
Jackson Co. and Kentucky silvery, 6%	21.40 to 21.90
Jackson Co. and Kentucky silvery, 8%	22.40 to 22.90
Jackson Co. and Kentucky silvery, 10%	23.40 to 23.90

(*By Mail.*)

Billets.—There is no change in the billet situation. The axle manufacturers continue to obtain their supplies from old established sources and buyers of forging billets are able to cover their requirements by purchases from Eastern mills.

Rails and Track Supplies.—Orders for standard rails taken by Western mills last week amounted to about 10,000 tons, about half of which was Bessemer and the remainder open hearth. This business came from small Western railroads, the largest item being 4000 tons from a terminal company at Kansas City. Specifications for track supplies are keeping up at the usual heavy rate, track material not being affected by the political embargo on purchases by railroads. We quote standard railroad spikes at 1.85c. to 1.95c., base; track bolts and square nuts, 2.40c. to 2.60c., base, all in carloads, Chicago. Light rails, 40 to 45 lb., $27; 30 to 35 lb., $27.75; 16, 20 and 25 lb., $28; 12 lb. $29, Chicago.

Structural Material.—The Lackawanna Bridge Company has made its entree in the Western trade by taking about 2000 tons of fabricating contracts the past week. Included in this is about 900 tons for the new shops of the American Radiator Company at Kansas City, about 800 tons of small bridges for the Kansas City Southern Railway and about 200 tons for a viaduct at Ishpeming, Mich., for the Lake Superior & Ishpeming Railway Company. Only three other contracts of moment are reported here for last week. One was the Gunter office building at San Antonio, Texas, 462 tons, which was let to Christopher & Simpson of St. Louis, who will use Bethlehem shapes. The American Bridge Company has taken a contract for several buildings, requiring about 1000 tons, for the Butte & Superior Copper Company's smelter at Butte, Mont. The American Bridge Company has also booked 420 tons for an addition to the Utah Hotel at Salt Lake City, a building which is now under construction. Inquiries for fabricated material are unusually good in the West, and current orders for small lots continue a very important feature of the market. We quote plain material from mill, 1.78c. to 1.88c., Chicago; from store, 2c., Chicago.

Plates.—No new business of moment is reported in this market, but the mills are sold so far ahead that nothing could be taken for anything like near delivery and very attractive business was refused recently by Western mills. Under these circumstances the lack of car orders from Western roads does not affect the market. The policy of the Western roads in holding off on purchases of equipment which they need is a subject of much discussion, but has not affected any branch of the market for finished products. We quote mill prices at 1.78c. to 1.88c., Chicago; store prices, 2c., Chicago.

Sheets.—The current demand continues very good for galvanized and black sheets, while blue annealed sheets are so eagerly sought that the local mill obtains a premium for reasonably prompt delivery, although deferred business is taken at schedule prices. We quote as follows, Chicago: No. 10 blue annealed, 1.93c.; No. 28 black, 2.58c.; No. 28 galvanized, 3.68c. Prices from store, Chicago, are: No. 10 blue annealed, 2.25c. to 2.35c.; No. 28 black, 2.90c. to 3c.; No. 28 galvanized, 4c. to 4.10c.

Bars.—It was generally expected that January would be a light month in specifications for soft steel bars, but the Western mills found their total for the month about equal to December, and February may show a correspondingly good record. New business is not of notable proportions, but most of it going to Eastern mills which can promise earlier deliveries than can be obtained in the Chicago District. Much of this new business, however, grows out of the effort of large buyers to obtain from some new source material which they cannot get from mills which hold their regular contracts. The rush to buy odd lots from store continues, and the smaller bar mills pick up many carload orders at a handsome premium where they are in shape to make prompt shipment. The railroads have not bought anything for some time, but their absence from the market is welcomed by the mills rolling soft steel bars. The bar iron mills are getting the usual specifications on their railroad contracts and have enough business to carry them comfortably several months until the political clouds have passed

by. The demand for bars for reinforcing concrete is becoming a very important factor in the market. One inquiry last week amounted to 3000 tons of this material, while inquiries of several hundred tons for concrete work are quite common. Hard steel bars from old rails are used extensively in this work, although some soft steel is also called for. Prices remain firm for all grades of bars. Subject to the usual delay in delivery on soft steel bars, we quote as follows; Soft steel bars, 1.68c. to 1.78c.; bar iron, 1.60c. to 1.65c.; hard steel bars rolled from old rails, 1.60c. to 1.65c., all Chicago.

Rods and Wire.—The shortage continues in rods and plain wire for manufacturing purposes, as the demand has been so heavy the past fall and winter that the mills have been unable to keep up with it. The hardware jobbing trade is well supplied with nails and other wire products, but jobbers are still liberally buying for spring shipment to cover the distributing trade. No change is reported in prices at this writing. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.83c.; wire nails, 2.03c.; painted barb wire, 2.03c.; galvanized, 2.33c., all Chicago.

Merchant Steel.—It is evident that the machinery manufacturers are well supplied with business, as their specifications for smooth machinery steel have been so heavy that the mills require from four to six months for deliveries on new business. A great deal of disappointment is expressed among the implement manufacturers owing to their inability to obtain their special grades of material and the quantity they want. The automobile plants also have the same trouble in getting satisfactory delivery of their special grades.

Cast Iron Pipe.—January was a very quiet month in the Northern market for cast iron pipe, and no lettings of any moment are reported for last week, the city of Chicago not yet having accepted the bids requested for water pipe. There is good business in prospect, however, in the near future. Detroit will open bids this week for 4300 tons of water pipe and Duluth next week for 2000. One firm of engineers has plans under way in Kansas for 38 water works projects, mostly calling for small lots for interior cities in the State. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $28.50; 6 to 12 in., $27.50; 16-in. and up, $26.50, with $1 extra for gas pipe.

Old Material.—The market has been very quiet the past week on nearly all grades of old material, and there have been declines in many of the lines of scrap which are affected by the recent political embargo of the railroads. The manufacturers of equipment and other new material for railroads are large buyers of scrap, and when the purchasing departments of the railroads shut down on buying new material the scrap market is the first to feel the effect of the stoppage. Heavy melting steel has maintained a flat price of about $16 for the past three months for delivery to consumers in the Chicago District, but is quoted lower this week. Old iron rails, which are used principally in the manufacture of railroad equipment, are quoted $1 lower and short steel rails are also difficult to place at concessions in price. Wrought scrap is easier and buyers are indifferent, as the rolling mills are not getting new bar business from railroads and have stocks of scrap that will carry them several months. Improved shipping service is bringing in a larger supply of scrap which was tied up last month, and the lack of demand makes the market easier all along the line. The car wheel foundries are buying nothing, and the market for old wheels is unsettled. Dealers have great difficulty in placing small consignments at $18. There have been no railroad lists of scrap in the market the past week to afford comparison with prices a month ago, and dealers report only scattering trades. The following prices are per gross ton, delivered, Chicago:

Old iron rails	$19.00 to $19.50
Old steel rails, rerolling	18.00 to 18.50
Old steel rails, less than 3 ft	16.50 to 17.00
Relaying rails, standard sections, subject to inspection	24.00 to 25.00
Old car wheels	18.00 to 18.50
Heavy melting steel scrap	15.50 to 16.00
Frogs, switches and guards, cut apart	15.50 to 16.00
Shoveling steel	15.00 to 15.50

The following quotations are per net ton:

Iron angles and splice bars	$17.50 to $18.00
Iron car axles	21.50 to 22.00
Steel car axles	21.00 to 22.00
No. 1 railroad wrought	14.75 to 15.25
No. 2 railroad wrought	13.75 to 14.25
Springs, knuckles and couplers	14.75 to 15.25
Locomotive tires, smooth	19.00 to 19.50
No. 1 dealers' forge	12.50 to 13.00
Steel axle turnings	11.50 to 12.00
Machine shop turnings	10.50 to 11.00
Cast and mixed borings	7.50 to 8.00
No. 1 busheling	12.75 to 13.25
No. 2 busheling	9.75 to 10.25
No. 1 boilers, cut to sheets and rings	11.50 to 12.00
No. 1 cast scrap	15.00 to 15.50
Stove plate and light cast scrap	12.50 to 13.00
Railroad malleable	14.75 to 15.25
Agricultural malleable	13.00 to 13.50
Pipes and flues	11.75 to 12.25

Metals.—The decline in spelter continues and carload buyers are now quoted 5.90c. to 6c. by Chicago jobbers. Large consumers have had free offerings at 5.70c., but it is believed that this could be shaded on a considerable tonnage. There is a fair demand for copper, with practically no change in price and the fluctuations in tin have not shown a wide enough range to change the price quoted last week. Another reduction of 25 cents has been made in sheet zinc. We quote Chicago prices as follows: Casting copper, 13¾c.; lake, 14⅛c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 33½c.; small lots, 35c.; lead, desilverized, 4.70c. to 4.80c., for 50-ton lots; corroding, 4.95c. to 5.05c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.90c. to 6c.; Cookson's antimony, 10⅜c., and other grades, 9¾c. to 10¼c.; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13¾c.; copper bottoms, 12c.; copper clips, 13½c.; red brass, 12¾c.; yellow brass, 10c.; light brass, 7c.; lead pipe, 4½c.; zinc, 5.25c.; pewter, No. 1, 23c.; tin foil, 26c.; block tin pipe, 28c.

Philadelphia.

PHILADELPHIA, PA., February 8, 1910.

A certain amount of hesitancy is still observable in many branches of the iron trade. In some classes of finished materials, however, a slightly better volume of business has been done. The undertone of the market, generally, is strong. Deliveries in some products are somewhat easier, but prices on the whole show no appreciable change. No further breaks in prices are to be noted in the pig iron market. Billets, shapes and sheets have been the most active among finished products. Old material is dull and prices show a decline in some grades. The coke market is easy, concessions being made where makers are anxious to move stocks.

Pig Iron.—Sales during the week have been mainly foundry grades, the bulk of the business transacted being in Virginia irons, which have been sold in lots ranging from 100 to 600 tons, for either prompt or first half shipment, at $18.50 for No. 2 X, delivered in this territory. While sales have aggregated a pretty good tonnage in these grades, statistics compiled by the Virginia Pig Iron Association show that stocks and orders on hand at the first of the month were practically the same as those a month previously, indicating that sales and shipments about equaled the current make, and that the accumulated stocks of some producers had not been materially reduced. The Northern producers of foundry grades have, so far, refused to meet the cut in prices made by the Virginia producers. The majority of makers of pig iron in this territory are pretty well fixed as far as orders for the first half are concerned, under which circumstances the leading producers are still disinclined to make any concessions from the recent $19, delivered, basis for No. 2 X for first half shipment, although very little except occasional carload lot business is done at that basis. In a few cases a concession of 25 cents has been done; while reports of further shading on offerings of prompt lots in some grades, where there has been iron available owing to special circumstances, are heard, they lack confirmation. For the greater part consumers are taking deliveries freely, but less urgency for shipment is noted as to some buyers, and occasionally deliveries are deferred. While there is still some inquiry for iron for forward delivery the majority of the melters are buying conservatively and are inclined to await further developments before placing orders. There has been less movement in low grade irons, although buyers would, no doubt, take tonnage at their own prices. One cargo of 4000 tons of Middlesbrough iron, which was purchased several months ago, arrived at this port during the week. One half of this cargo goes to a Delaware River pipe works, the other half being for New England delivery. No movement in Southern foundry iron has been reported, it being practically out of this market at prevailing prices. While there has, no doubt, been more basic iron offered, few consumers are interested at present. Southern and Western basic has been offered at $18.50, delivered at Eastern mills, but we can learn of no transactions. One buyer is still in the market for a fair sized lot, but has not been able to get the iron at the price he offers. Belated reports of a sale of 6000 tons, made several weeks ago, have just come out. This was for second quarter shipment at $18.50, delivered. The majority of the Eastern producers maintain quotations ranging close to $18.75, delivered, although $18.50 could no doubt be done in a few cases. As consumers are pretty well covered for their first half needs, it would no doubt require a considerable concession in price to get them to place orders. The temporary idleness of the furnace of the Delaware River Steel Company, due to a fire a few days ago, which was running on basic iron at the time, will hardly have any influence on the market. Low phosphorus iron has not been quite so active, but one sale of 600 tons being announced. Inquiry for this grade is less pronounced. The general range of quotations for delivery in buyers' yards in this vicinity is practically unchanged; both buyers and sellers are waiting further developments, although the feeling of uneasiness is less pronounced. We quote as follows for shipments extending over the first half of the year:

Eastern Pennsylvania, No. 2 X foundry	$18.75 to $19.00
Eastern Pennsylvania, No. 2 plain	18.25 to 18.50
Virginia, No. 2 X foundry	18.50
Virginia, No. 2 plain	18.00
Gray forge	17.50 to 18.00
Basic	18.50 to 18.75
Low phosphorus	23.00 to 23.25

Ferromanganese.—Extremely quiet conditions prevail. One transaction of 150 tons, for early delivery, is the only sale reported. Prices are unchanged, ranging from $43.50 to $44.50, seaboard, dependent on tonnage and delivery.

Billets.—A very good demand continues. Eastern mills are running at full capacity and find it difficult to make early shipments, which some buyers are urging. The market is strong; ordinary open hearth rolling billets, for reasonable shipment, are quoted at $30.60, delivered in this vicinity, although small lots of odds and ends are occasionally obtainable at a slight concession. Forging billets are firm at $33 to $36, Eastern mill, dependent on specifications. For prompt shipment both rolling and forging billets command a premium.

Plates.—The demand has been a trifle less active, particularly in quantities running to any size. The bulk of the business has been of a small lot class, which in the aggregate amounts to a pretty fair tonnage. Deliveries, in some cases, are easier, but prices show no change, ranging from 1.75c. to 1.80c. for ordinary plates delivered in buyers' yards in this vicinity.

Structural Material.—A better demand for both plain shapes and fabricated material is noted. Several mills report an increased volume of orders, both in miscellaneous business and in building work. One Eastern fabricator has taken orders for two 1600 ton and one 1300 ton propositions, and there are still several good contracts pending. Mills are better supplied with orders, and the outlook for the future is more satisfactory. Prices are firm, 1.75c. to 1.80c., delivered, being named, according to specifications.

Sheets.—The demand appears to be increasing and makers, although running at full capacity, have been unable to keep up on deliveries. While individual orders may not be large, the aggregate volume is beyond the capacity of producers on some sizes. Deliveries are hardening considerably, and prompt shipments command a premium. The following range of quotations is made for reasonably early delivery: Nos. 18 to 20, 2.80c.; Nos. 22 to 24, 2.90c.; Nos. 25 and 26, 3c.; No. 27, 3.10c.; No. 28, 3.20c.

Bars.—Buyers are placing orders conservatively, and the volume of business in sight is not extensive. Deliveries on steel bars are a shade easier, while refined iron bars can be had for comparatively prompt shipment. The leading producers maintain prices for refined iron bars at 1.65c. to 1.70c., delivered, dependent on tonnage and specification; a number of the smaller mills, however, accept business on a 1.60c. delivered basis. Steel bars are unchanged at 1.65c. to 1.70c., delivered in this territory.

Coke.—The market lacks strength. While some makers of the leading brands maintain quotations firmly, others are inclined to make concessions, particularly for spot coke, which some are anxious to move. Few consumers are willing to contract at the present stage of the market. Good brands of foundry coke for delivery over the first half are quoted at $2.85 to $3.10, at oven, according to grade and delivery. Furnace coke is quoted at $2.10 to $2.35, dependent on grade and delivery. The following range of quotations per net ton is named for deliveries in this vicinity:

Connellsville furnace coke	$4.35 to $4.60
Foundry coke	5.10 to 5.35
Mountain furnace coke	3.95 to 4.20
Foundry coke	4.70 to 4.95

Old Material.—The market shows further signs of weakness. With the several railroad lists pending, mills show no disposition to buy from merchants, and any effort to sell usually meets with the response that the buyer is not in the market. Heavy melting steel for early delivery has been offered at $17 without finding a buyer. The Eastern mills are well supplied with scrap and have good quantities due them from abroad, which they are taking in to the exclusion of domestic material. Embargoes are still in force at a number of the Eastern mills. Rolling mill grades are dull. In the absence of sales, quotations are rather hard to name and are to a large extent nominal, ranging about as follows for delivery in buyers' yards in this vicinity:

No. 1 steel scrap and crops	$16.50 to $17.00
Old steel rails, rerolling	17.50 to 18.00
Low phosphorus	22.75 to 23.25
Old steel axles	22.50 to 23.50
Old iron axles	27.50 to 28.00
Old iron rails	20.00 to 21.00
Old car wheels	16.75 to 17.25
No. 1 railroad wrought	19.00 to 19.50
Wrought iron pipe	16.25 to 16.75
No. 1 forge fire	15.50 to 16.00
No. 2 light iron	10.25 to 10.75
Wrought turnings	13.75 to 14.25
Cast borings	11.50 to 12.00
Machinery cast	16.00 to 16.50
Railroad malleable	16.25 to 16.75
Grate bars	14.00 to 14.50
Stove plate	13.00 to 13.50

Cincinnati.

CINCINNATI, OHIO, February 9, 1910.—(*By Telegraph.*)

Consumers of crude or finished material alike seem disposed to play a waiting game. There is suggestion of a little softening of pig iron and coke prices but no indication of any concessions in finished products. Large manufacturing enterprises in this territory seem disposed to await the outcome of the corporation tax and other legislative discussion measures, and the old material dealers are looking for relief to the second half of the year. Both pig iron and coke are being taken on contracts in good form.

Pig Iron.—The market is featureless both as to transactions and prices, and neither furnaceman nor seller seems disposed to make a move. The territory has been thoroughly canvassed by aggressive selling agencies since the first of the month to find that fully 95 per cent. of melters are covered for first half requirements. The only hint of activity comes from St. Louis territory, where some 50,000 tons of basic iron are in negotiation or will be very soon for closing before the 20th inst. These steel makers will buy for the second, third and fourth quarters, and the business will be divided of necessity. Southern makers will have the advantage with a $3.75 freight rate from Birmingham, as $17.50, at furnace, is about the best that can be done in southern Ohio and 50c. less from the valleys. A malleable foundry in Canton, Ill., is reported to have bought between 7000 and 8000 tons of malleable Bessemer, also some Southern foundry for second and third quarters and last half, the former iron at about $17, at furnace. Inquiries are few. An Indiana manufacturer of blowers wants some iron analyzing 0.175 and over and some 0.225 and over of silicon, 300 tons of each, 80 to 90 tons per month. A Hamilton, Ohio, jobbing foundry is in negotiation for some foundry iron for last half. An engine and agricultural implement manufacturer in Indiana has just purchased about 2500 tons of Northern and Southern for second and third quarters, a part of it high manganese. Northern irons for delivery over the second half at present prices naturally head the list, as increased ore and other costs after July 1 will stiffen last half prices of the Ohio product. From the present situation little fear is felt by melters that there could arise any condition that would justify an advance in the price of the Southern product for the last half, unless the present rate of production should be materially curtailed. The new freight tariff on the Virginia product does not affect conditions in this central territory, but will offer some competition with irons for delivery to points west of Chicago. Reports of shading of $14, Birmingham, on second and third quarter cannot be verified. There is no inquiry for low grades and the pipe companies are apparently not interested. For prompt delivery and through the first half, f.o.b. Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from the Hanging Rock District, we quote as follows:

Southern coke, No. 1 foundry	$17.75
Southern coke, No. 2 foundry	17.25
Southern coke, No. 3 foundry	16.75
Southern coke, No. 4 foundry	16.00
Southern coke, No. 1 soft	17.75
Southern coke, No. 2 soft	17.25
Southern gray forge	16.00
Mottled	15.75
Ohio silvery, 8 per cent. silicon	21.20
Lake Superior coke, No. 1	18.70
Lake Superior coke, No. 2	18.20
Lake Superior coke, No. 3	17.70
Standard Southern car wheel	$24.75 to 25.25
Lake Superior car wheel	21.75 to 22.25

(*By Mail.*)

Coke.—In the Connellsville region there is a little restriction of output to avoid the creation of any surplus, amounting to about one day's make per week. Furnace grades in this district are quotable at $2.40 to $2.50 per net ton, at oven, for prompt shipment and $2.40 to $2.75 on contract; foundry grades range from $2.90 to $3.25 for prompt and $3 to $3.25 on contract. There are some fair sized tonnages of both furnace and foundry cokes under consideration for early closing for the remainder of the year. Wise County furnace grades are still selling at $2.50 to $2.65, at oven, for prompt shipment, with special arrangements for forward delivery. Wise County foundry is obtainable for prompt shipment at $2.75 to $3. New River grades are quotable at about the same prices.

Finished Iron and Steel.—Large sellers report the situation in finished products strong, with an increasing interest shown in stocks for warehouse shipment. Structural shapes are quotable at 1.60c., Pittsburgh, and steel bars 1.50c. Structural material out of stock is selling here at 2c.; steel bars, 1.90c., and iron bars 1.75c. to 1.85c. Twisted steel bars for concrete work have been in better demand since the improvement in weather conditions and are quotable at 2c. base out of stock. It is understood that the mills will open their books in April for last half business. The demand for sheets has been fair for the week; local mills are from five to six weeks behind in deliveries. The official price rules, with no evidences of cutting. The only material selling for as late as September delivery is stove pipe sheets in order to give jobbers a chance to make their

contracts. Possibilities of early business come from Louisville-Evansville territory in connection with the new Kentucky and Indiana bridge, which, if to be double track, will take about 15,000 tons; if single, 7500. Another prospect is the Evansville-Henderson, Ky., bridge, which is before the City Councils now to determine the character and extent of the structure, to cost approximately $1,500,000, of which $435,000 comes from the county.

Old Material.—The market continues quiet, with a few grades of scrap easier, and some, because of absence of business, uncertain. There is some business in old car axles, as also in relayers. On the whole, the situation is still a waiting one, with dealers hopeful of an improvement not later than April. The prices given are nominal and are as representative of this market as it is possible to get them under the conditions. For delivery in buyers' yards, Cincinnati and southern Ohio, we quote as follows:

No. 1 railroad wrought, net ton	$14.50 to $15.00
Cast borings, net ton	8.00 to 8.50
Heavy melting steel scrap, gross ton	14.75 to 15.25
Steel turnings, net ton	9.50 to 10.00
No. 1 cast scrap, net ton	13.00 to 13.50
Burnt scrap, net ton	10.00 to 10.50
Old iron axles, net ton	18.50 to 19.00
Old iron rails, gross ton	18.00 to 18.50
Old steel rails, short, gross ton	15.00 to 15.50
Old steel rails, long, gross ton	16.00 to 16.50
Relaying rails, 56 lb. and up, gross ton	23.00 to 24.00
Old car wheels, gross ton	15.00 to 15.50
Low phosphorus scrap, gross ton	17.50 to 18.00

Birmingham.

BIRMINGHAM, ALA., February 7, 1910.

Pig Iron.—An aggregate of some 20,000 tons is reported involved in transactions of the past week. The deliveries in some cases are understood to extend through the third quarter, although the larger portion is for shipment during the first half. It is quite likely that the majority of recent sales were closed at figures representing a $14, Birmingham, basis. A round tonnage is known to have been engaged at that price, but where shipments were to extend into the third quarter it is not believed that the tonnage offered was an inducement for lower price than $14.50. The last named price is now being quoted by one of the leading interests and by a smaller concern on second quarter deliveries, while the largest producer in this district adheres to its former prohibitive price of $15 for any delivery. All producers who are in the market for deliveries after the first half make quotations with some reluctance and are disposed to be governed largely by the conditions in each individual case. Reports from the various sources would indicate that the tonnage engaged for shipment after the first half has been fairly well distributed among the interests who have solicited such orders, yet the recent activity of the market has not stimulated the demand for future deliveries to an appreciable extent. The inquiry from all lines of the trade is very satisfactory and no report is made of requested hold-ups of tonnage previously engaged. Latest stock reports do not show that the aggregate accumulation was reduced during the month of January. The aggregate of warrant iron was reduced, and, as such iron has largely met the demand for prompt shipments, the reduction is considered an indication of a larger melt. No preparations are under way for an addition to the active furnace capacity in the near future and it is not now improbable that the change from foundry grades to basic iron, previously mentioned, will be made in the course of some months. An addition has been made to the production of charcoal iron, but without having affected prices.

Cast Iron Pipe.—With the approach of more favorable weather conditions for the laying of water mains, an attractive volume of business is quite naturally anticipated, but there is no prospect for a material addition to order books within the next few weeks. The demand for such small lots as are required for maintenance purposes is reported good, with prices received satisfactory. We quote water pipe at the following, per net ton, f.o.b. cars here; 4 to 6 in., $25; 8 to 12 in., $24; over 12-in., average $23, with $1 per ton extra for gas pipe.

Old Material.—This market is more active than at the time of last report, especially so far as wrought and steel grades are concerned. Report is made of the sale of 750 to 1000 tons of mixed scrap for prompt shipment at prices in keeping with those published for such grades. A scarcity of country scrap is complained of by dealers and better grades of cast and machinery are assembled at a very unsatisfactory rate. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$20.00 to $20.50
Old iron rails	16.00 to 16.50
Old steel axles	19.00 to 19.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	12.00 to 12.50
No. 1 country wrought	11.50 to 12.00
No. 2 country wrought	11.50 to 12.00
No. 1 machinery	13.00 to 13.50
No. 1 steel	12.25 to 12.75
Tram car wheels	12.50 to 13.00
Standard car wheels	14.50 to 15.00
Light cast and stove plate	10.50 to 11.00

Cleveland.

CLEVELAND, OHIO, February 8, 1910.

Iron Ore.—Some new inquiry for Bessemer ore came out during the week. One interest had an inquiry out for 25,000 tons and purchased small lots from different dealers. Otherwise the market has been quiet. Merchant ore firms do not expect much business during the next few weeks. Some makers of foundry iron have not purchased all the ore they will need, but it is believed that they will hold off until the demand for that grade of iron becomes more active. Eastern consumers are still staying out of the market, but orders for a fair tonnage are looked for from that source during the spring. Dock shipments to the furnace yards are fairly good, being considerably heavier than at this time a year ago. We quote prices as follows: Old range Bessemer, $5; Mesaba Bessemer, $4.75; old range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The market is quiet and some softness in prices on foundry iron for spot shipment and first half is apparent. While considerable tonnage has been sold in the past few weeks by local interests for last half delivery in other sections, little has been sold to consumers in this territory. Inquiries have fallen off, and some of those that came out in the last two or three weeks did not result in sales. For spot shipment and first half delivery lower prices are being quoted by local furnaces, $17.50, delivered, Cleveland, and $17, at furnace, for outside shipment, being the usual quotations for No. 2 foundry, but these quotations might be shaded to get the business in case a good inquiry should develop. In the Valley No. 2 foundry is quoted at $17 for the first half, but this quotation has been shaded 25c. for prompt shipment. For last half delivery both local and Valley furnaces are generally quoting No. 2 at $17.50. That this price is being quite closely adhered to is indicated by the report of a local foundry that tested the market on an inquiry for 1000 tons, but was unable to secure a lower quotation. This price at present, however, is not attractive to buyers, who apparently are waiting for lower quotations or until the market becomes firmly established at the present basis. With the present condition of the market not much buying is expected for another month. One local interest reports inquiries pending aggregating 2500 tons of foundry iron for the first half and third quarter. Reports from malleable foundries indicate a satisfactory condition, and the demand for malleable iron for the last half delivery is holding up fairly well. One local furnace interest reports the sale of a limited tonnage during the week and two new inquiries, one for 3000 tons and another for the same amount or more. In Southern iron we note the sale of two 400 lots at $14, Birmingham, for third quarter delivery. For prompt shipment and the first quarter we quote, delivered, Cleveland, as follows:

Bessemer	$19.90
Northern foundry, No. 1	$18.00 to 18.25
Northern foundry, No. 2	17.50 to 17.75
Northern foundry, No. 3	17.00 to 17.25
Gray forge	17.15
Southern foundry, No. 2	18.35
Jackson County silvery, 8 per cent. silicon	21.55

Coke.—Low prices are being quoted on furnace coke for spot shipment, and considerable tonnage is being offered at about $2.35 per net ton, at oven, for standard Connellsville coke. This price could probably be shaded. We note the sale of one 20,000-ton lot at $2.35 for delivery extending over 30 days. There is little demand for foundry coke and lower prices are quoted for contracts. We quote Connellsville 72-hour foundry coke at $3 to $3.15 for spot shipment and $3 to $3.25 for the first half.

Finished Iron and Steel.—Specifications in bar products show a falling off during the past week, as compared with January. The less active demand is not attributed to a decrease in the consumption, but to the fact that not only have consumers a considerable tonnage coming on 1909 contracts, but heavy specifications have been sent to the mills on first quarter contracts. Some of the largest consumers have already sent in specifications for their entire tonnage on their first quarter contracts. A fair volume of current business is coming out and new inquiries, which are largely for plates and structural material, are somewhat more plentiful, being mostly for small lots. There is little inquiry for bar contracts, as most of the consumers are covered with contracts. Prices on steel bars are firm at 1.50c., Pittsburgh. The demand for plates is fairly active, and better deliveries are being made by some of the mills. Plates are firm at 1.55c. to 1.60c., Pittsburgh, the former price being quoted for desirable orders. One mill agency reports the closing of a contract for 3000 tons for delivery until July 1 at the higher price. An Eastern mill that has been selling plates in this market at 1.60c., at mill, for quick shipment, is now shading that price $1 a ton on universal plates. Structural material is firm at 1.55c. to 1.60c., Pittsburgh, nearly all the sellers maintaining the latter price. The contract for the addition to the Rockefeller Building, Cleveland, 3000 tons, has been let to the Thompson-Starrett Company, New York. The city of Cleveland has awarded

contracts for about 1200 tons of steel for bridge work to the Van Dorn Iron Works Company and the King Bridge Company of Cleveland, the former getting the bulk of the tonnage. On the largest bridge, requiring 575 tons, the Van Dorn Company bid $61.25 per ton, erected. The demand for sheets continues fairly active. While the leading interest and some of the large independent mills are crowded with orders, a number of the small mills can make prompt shipment. Not much new bar iron business is coming out, but mills are getting good specifications on contracts. Prices are firm at 1.60c. to 1.65c., Cleveland. A local interest is in the market for 200 tons of standard section rails for work in connection with a blast furnace plant. The demand for light rails continues fairly good. Jobbers report an improvement in warehouse orders as compared with January.

Old Material.—The continued dullness of the market has finally resulted in a softening of prices, and nearly all grades are quoted 50c. a ton lower. In some cases further concessions could, doubtless, be secured. The lower prices are being asked by dealers who have scrap coming in. They do not want to store it in their yards and are anxious to move it, even at lower prices. The demand continues light. Mills are still well filled up and are buying in only small lots. Dealers feel that the easing up of prices is only temporary and are not disposed to quote present prices for scrap in their yards. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$15.75 to $16.25
Old iron rails	19.00 to 19.50
Steel car axles	20.00 to 20.50
Old car wheels	16.50 to 17.00
Heavy melting steel	15.50 to 16.00
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	14.00 to 14.50
Railroad malleable	16.00 to 16.50
Light bundled sheet scrap	10.50 to 11.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	8.25 to 8.50
Iron and steel turnings and drillings	10.00 to 10.50
Steel axle turnings	11.50 to 12.00
No. 1 busheling	14.00 to 14.50
No. 1 railroad wrought	16.00 to 16.50
No. 1 cast	14.50 to 15.00
Stove plate	12.75 to 13.25
Bundled tin scrap	11.00 to 11.50

St. Louis.

ST. LOUIS, February 7, 1910.

The freight business of St. Louis aggregated 44,527,940 tons for 1909. The increase over 1908 was 4,883,940 tons, or 12.31 per cent. Building is on the increase as shown by the January report, the gain over the corresponding month last year being more than $300,000. The total operations were $1,461,000. Banks also show a gain for the first month of the year over 1908. The demand for money is fairly good and the supply of loanable funds is large. While there is some hesitation in pig iron and coke and weakness in metals there is a large output of finished stock and a good demand. Manufacturers and jobbers are busy and in many instances have large bookings for future delivery. The liquidation in stocks has no appreciable effect on general business. Crop prospects on wheat continue favorable, taking in the entire wheat belt.

Coke.—Transactions in coke continue on the moderate scale which has prevailed since New Year's and there is no snap to the market. In fact, inspite of a decline of nearly 50c. per ton since the high point, the market is ruling weak, mainly owing to the limited demand. One effect of the lower price is noted in the reluctance of producers to book long time contracts on the basis of current figures. Shipments are coming forward better and no complaint is made either with respect to orders being filled promptly or delay in transportation. We quote for standard Connellsville foundry, $3 to $3.25, according to quality, for shipment through the year per net ton, f.o.b. oven.

Pig Iron.—The leading sales agencies express disappointment with regard to the business of the past week, for while they looked for an improvement in the demand over the previous week, trade has ruled quieter, and the weakness in prices is a little more pronounced. It is thought that merchant sellers are growing more bearish in their views, and so far as their influence goes are using it to bring about a decline. The offerings of resale iron are not as large or as urgent as was the case until recently, and, therefore, not much of a factor in influencing prices. The situation in Wall Street, rumors of local strikes and the importations of foreign iron, together with a well supplied condition as regards the larger buyers, are confining trade to small consumers. Houses which cater to this class of buyers and whose business covers a wide range of territory, are fairly busy, and the aggregate of their sales is reasonably satisfactory. In case of one merchant seller, the round-up for last month was so favorable that he can hardly count on an active demand for February. Most of the offices report inquiries ranging from 100 to 500 tons, principally for Southern foundry. Nominally, prices remain unchanged, and we quote for Southern No. 2 foundry and basic, for shipment prior to July 1, $14; for shipment over the last half, $14.50, f.o.b. Birmingham, though for the latter delivery there is very little inquiry. Southern Ohio is quoted at $17, f.o.b. furnace.

Lead, Spelter, Etc.—The market for lead is quiet and the price is a trifle higher for the week at 4.57½c. Spelter is lower and offered at 5.62½c., East St. Louis. Zinc ore is easier and quoted at $44 per ton, Joplin base. Tin is off 10c. per 100 lb.; antimony unchanged; copper, 2½c. per 100 lb. lower. The demand for finished metals ruled fairly active for the week.

Old Material.—Dealers report a slight improvement in the demand, but there is hardly a sufficient call from consumers to make a market, transactions being mostly confined to dealers. The fact, however, that stocks are very light imparts a degree of strength. Offerings by the railroads are not large, the only lists out being 1200 tons each by the Missouri Pacific and the St. Louis & San Francisco. There is no Eastern outlet at present. Relaying rails, heavy sections, are well cleaned up and wanted. The demand for old car wheels has fallen off and the price is 50c. per ton lower. The balance of the list remains unchanged and somewhat nominal. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails	$16.00 to $16.50
Old steel rails, rerolling	15.50 to 16.00
Old steel rails, less than 3 ft	14.50 to 15.00
Relaying rails, standard sections, subject to inspection	25.00 to 25.50
Old car wheels	17.00 to 17.50
Heavy melting steel scrap	14.50 to 15.00
Frogs, switches and guards, cut apart	14.50 to 15.00

The following quotations are per net ton:

Iron fish plates	$14.50 to $15.50
Iron car axles	20.50 to 21.00
Steel car axles	19.50 to 20.00
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	14.50 to 15.00
Railway springs	13.00 to 13.50
Locomotive tires, smooth	16.00 to 17.00
No. 1 dealers' forge	11.50 to 12.00
Mixed borings	8.00 to 8.50
No. 1 busheling	13.00 to 13.50
No. 1 boilers, cut to sheets and rings	11.00 to 11.50
No. 1 cast scrap	13.50 to 14.00
Stove plate and light cast scrap	10.00 to 10.50
Railroad malleable	12.00 to 12.50
Agricultural malleable	9.50 to 10.00
Pipes and flues	10.50 to 11.00
Railroad sheet and tank scrap	9.50 to 10.00
Railroad grate bars	10.50 to 11.00
Machine shop turnings	10.50 to 11.00

The Illinois Steel Warehouse Company, an Illinois corporation, with a home capital of $100,000, has been licensed to use $40,000 thereof in business in St. Louis.

The Commonwealth Steel Company announced that within 10 days the new addition to its Granite City plant will be completed and 400 additional men placed on the payroll. The company has under construction four new buildings, to be equipped with machinery of the most improved type.

Buffalo.

BUFFALO, N. Y., February 8, 1910.

Pig Iron.—The halt in demand, caused apparently by the unfavorable aspect of the security market and the uncertainty relative to legislative action respecting corporate interests continues, and negotiations which were under way a week or two ago on a good many large inquiries for last half delivery have evidently been suspended temporarily by the consumers, awaiting a clearing of the situation. Furnaces in this district are not sufficiently anxious to take on new business to enter aggressively into competition with other producing districts and are not making the necessary cuts to meet the reduced prices recently put into effect by Virginia furnaces, which affects New England territory and the Atlantic coast towns as respects this district, but does not, however, affect New York State and middle Pennsylvania points. Price schedules have not been changed, notwithstanding the fact that little new business is being done. Slightly lower quotations might have to be made temporarily to secure business, especially from New England points. We quote as follows, per gross ton, f.o.b. Buffalo:

No. 1 foundry	$18.00 to $18.25
No. 2 foundry	17.50 to 18.00
No. 2 plain	17.00 to 17.50
No. 3 foundry	17.00 to 17.25
Gray forge	16.75 to 17.00
Malleable	17.50 to 18.00
Bessemer	19.50 to 19.75
Basic	18.00 to 18.50
Charcoal	20.50 to 21.00

Finished Iron and Steel.—Leading sellers report that hoops, which have been the weak point compared with other lines, are beginning to strengthen; inquiries are more plentiful, a good deal of business is being booked and prices are firmer. In general lines most agencies report that inquiries are increasing and that specifications against contracts are being received in a little larger volume than during

January. Specifications on cold rolled steel are still very heavy. The Canadian export demand is fairly good, especially for shipbuilding material. In structural shapes the demand continues active and a fair number of new building projects are being figured on. Bids are being asked this week for the 550 tons of steel required for the new plant of the King Sewing Machine Company, Buffalo, and bids were taken last week for 250 tons of steel for the Dun, Salmon Company's warehouse, Syracuse. Among the contracts awarded this week were the following: Addition to plant of the Otis Elevator Company at Buffalo, 650 tons, given to the Buffalo Structural Steel Company; Standard Mirror Company's factory, Buffalo, 150 tons, taken by Charles Ernst Sons Iron Works, who also took 100 tons for the Hamburg, N. Y., high school; about 100 tons for the Washington B. French apartment house, Buffalo, which went to the Geo. Kellogg Structural Company. The American Bridge Company is to furnish the 120 tons for the Erie Canal bridge at Georgia street, Buffalo, and Wurtz & Son, Buffalo, are to furnish and erect the steel for the Marks Amusement Company theatre and the Faxon, Williams & Faxon Bakery, Buffalo, about 100 tons each. The steel contract for the extensive foundry of the Erie Engine Works, Erie, Pa., was let to the Riverside Bridge Company, Martin's Ferry, Ohio.

Old Material.—There is no change from the stagnant condition reported last week. All lines are exceedingly dull and trade is almost at a standstill. In the absence of demand prices remain unchanged, dealers making no effort to induce trade by shading quotations. The nominal price schedule is as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$16.00 to $16.50
Low phosphorus steel	19.50 to 20.00
No. 1 railroad wrought	16.50 to 17.00
No. 1 railroad and machinery cast scrap	16.00 to 16.50
Old steel axles	20.00 to 20.75
Old iron axles	25.00 to 25.50
Old car wheels	17.50 to 18.00
Railroad malleable	16.50 to 17.00
Boiler plate	13.50 to 14.00
Locomotive grate bars	13.00 to 13.50
Pipe	13.50 to 14.00
Wrought iron and soft steel turnings	10.50 to 11.00
Clean cast borings	9.00 to 9.50
No. 1 busheling scrap	13.50 to 14.00

The German Iron Market.

BERLIN, January 27, 1910.—The iron market has again given evidence of its inherent strength. The trading on the Düsseldorf Exchange on Friday brought advances in prices, but that meeting differed from previous ones of the past month or two in that the upward movement extended all along the line this time, and the gains were in many cases bigger than previously. Thus the rise of steel-making pig iron was from 58 to 60 marks to 60 to 63 marks; German Bessemer from 59 to 62 to 63 to 64; Luxemburg basic from 52 to 55 to 55 to 56; Luxemburg puddling from 48 to 50 to 50 to 52; Luxemburg No. 3 foundry from 53 to 54 to 55 to 56; German No. 1 foundry from 61 to 63 to 63 to 65; No. 3 from 60 to 62 to 62 to 63, and German hematite from 62 to 64 to 64 to 66. The advances on previous trading days had seldom been more than one mark. In addition to the above the following advances in more finished products were registered: Soft steel bars, 108 to 115, against 106 to 111 marks; iron bars, 130 against 125, and thin sheets 135 to 140 against 132.50 to 137.50 marks.

Moreover, the Steel Syndicate met January 25 and voted an advance of 5 marks on all semifinished steel for delivery in the June quarter. Other advances of prices are being discussed. The makers of bands and strips are to meet in a few days and are expected to mark up prices. The manufacturers of cold rolled products are said to be watching the movement in other departments with a view of lifting their own prices.

On the other hand, the Cologne *Gazette* reports that the price of scrap has fallen one mark a ton. The same newspaper, in its latest market review, takes occasion to warn the trade against a too rapid pushing of prices for pig, since English iron would begin to compete again on a larger scale if German prices should be lifted to too high a level. The reviewist notes that the situation of pig iron is not yet fully cleared up. The furnaces in the eastern part of the empire, he says, have already begun to take orders for 1911 delivery, and this makes it necessary for the western furnaces to look to their own interests. In the Siegerland District greater activity is noted. Two idle furnaces were blown in at the beginning of the year, and the Vereinigte Stahlwerke van der Zypen is about to blow in its third one, which had been blown out for about a year. It is further pointed out that the detached furnaces in that region, not owning their own ore supplies, cannot earn profits even after the recent advances in prices.

The Steel Syndicate gave out a rather more cheerful report at the meeting above referred to. It says that the trade in semifinished material has continued to show a satisfactory development; customers have contracted for their full wants for the current quarter, and contracts for the second quarter were declared open. Most of the German states owning railroads have contracted for their requirements of rails for the year; but the amounts taken are in nearly all cases less than for last year. Foreign business in heavy rails continues brisk, and large orders at satisfactory prices have recently come in. Some of these extend over several years. The home demand for mining rails is quieter, but the foreign market continues to buy actively. A more active demand for grooved rails has been noted; considerable new orders from home and foreign buyers have been recently booked. Notwithstanding the winter season, when building operations are mostly suspended, the demand for structural shapes has grown better, and greater activitiy is looked for later on.

Germany's foreign trade in iron of all sorts last year showed the following results: Imports, 458,541 metric tons, against 558,940 tons in 1908; exports, 4,044,391 tons, against 3,732,428 tons. The excess of exports over imports rose to 3,585,850 tons, comparing with 3,173,488 tons in 1908, and 2,639,053 tons in 1907. December showed a net balance of exports over imports amounting to 388,011 tons, which is a new record. In the year's exports the following were the figures for some of the chief commodities: Pig iron, 471,045 tons, against 257,850 tons; scrap, 173,890, against 163,761; semifinished steel, 474,854, against 471,865; beams, 301,570, against 271,524; bands and strips, 118,659, against 103,272; bars and fashioned forms, 487,007, against 504,464; steel rails, 364,662, against 331,323; other railroad steel, 121,742, against 121,613; heavy plates, 224,986, against 207,964; medium and thinner plates, 101,902, against 106,829; rolled tubing, 95,988, against 86,159; wire, 349,055, against 352,242, and wire nails, 67,664, against 74,287 tons.

The Merchants' Steel & Supply Company.

The Merchants' Steel & Supply Company, Chicago, has been organized and incorporated with a capitalization of $100,000, for the purpose of buying and selling scrap iron and steel, new and relaying rails and new and second-hand railroad supplies and equipment. The company is negotiating for the purchase of a yard on the Belt Line and Chicago & Western Indiana railroads, which it will equip with modern scrap yard machinery. The company expects to have its yard open in about 60 days.

W. K. Kenly is president of the company, and W. T. Twomey is vice-president. Mr. Kenly was formerly president of the W. K. Kenly Company, from which he severed his connection about two years ago, and Mr. Twomey was for a number of years with the Griffin Wheel Company, where he occupied the position of secretary of the American Trading & Storage Company, formerly an auxiliary company of that institution. The following constitute the Board of Directors: W. H. McWoel, chairman of the Chicago, Indianapolis & Louisville Railway; Frank F. Fisher, vice-president of the Massillon Iron & Steel Company; E. M. Allen, vice-president of the American Refractories Company; W. K. Kenly, and W. T. Twomey. Besides those named the company has several prominent iron, steel and railroad men as stockholders.

Edgar M. Moore & Co., Farmers' Bank Building, Pittsburgh, dealers in iron and steel products, machinery and equipment, have again taken representation of the Chapman Valve Mfg. Company, Indian Orchard, Mass., carrying a stock of Chapman valves in their warehouse in the Terminal Warehouses, Pittsburgh. L. J. Walsh, for several years with the company at the factory, is now with Edgar M. Moore & Co. in the capacity of office man and salesman. The company is designing new patterns and styles of valves and sluice gates, and is working on a new catalogue which is expected to be issued about June 1.

The Central Steel & Supply Company, 1709-11 Railroad Exchange Building, Chicago, has been appointed sales agent in the Chicago District for the New Castle Forge & Bolt Company, New Castle, Pa.

The annual meeting and dinner of the Manufacturers' Association of Pittsburgh will be held in the Fort Pitt Hotel, in that city, on Monday evening, February 14.

New York.

NEW YORK, February 9, 1910.

Pig Iron.—Quietness in the pig iron market is more pronounced. The competition of Virginia irons in New England furnishes practically the only incident. Buffalo furnaces are not attempting to meet the Virginia quotations in New England, and eastern Pennsylvania and New Jersey furnaces maintain the same attitude in territory around New York. Little iron seems to be required by foundries in this district for shipment in the next two months, and under the conditions created by the slump in security prices there seems to be no fear that prices for later delivery will go higher in the near future. Sales of Virginia No. 2 iron, with silicon equal to that of Northern No. 2 X foundry, though with slightly higher phosphorus, have been made at $15.25 at furnace. A combination rail and water rate of $3 makes the price of this iron $18.25 at New England port. It could be put alongside the Old Dominion dock in New York harbor at $18.05, making a delivered price in this district of $18.65. We quote Northern iron, New York delivery, first quarter, as follows: No. 1, $19 to $19.25; No. 2 X, $18.75 to $19; No. 2 plain, $18.50 to $18.75. For the same delivery, Southern iron is $19 to $19.25 for No. 1 and $18.50 to $18.75 for No. 2.

Steel Rails.—The Brooklyn Heights Transit Development Company has bought 1500 tons of rails. An order for 1800 tons of girder rails has been placed with the Pennsylvania Steel Company by the Public Service Corporation of New Jersey. The Baltimore & Ohio rail orders, as officially announced, amount to nearly 79,000 tons. The Maryland Steel Company secured 25,100 tons, the Carnegie Steel Company 24,850 tons, the Illinois Steel Company 21,700 tons and the Bethlehem Steel Company 7150 tons. The last-named contract is for open hearth rails, as are also 7600 tons of the Maryland Steel Company order and 11,500 tons of the Illinois Steel Company allotment. Of the Bessemer rails to be rolled at Sparrows Point 3000 tons are to be ferrotitanium rails. The greater part of the order, or 58,500 tons, will be 90-lb. rails, 17,500 tons will be 100-lb. and about 3000 tons, 75-lb. The Southern Railway is reported in the market for rails as well as several thousand cars.

Finished Iron and Steel.—No signs of increasing activity are yet apparent; all lines are exceedingly quiet. On account of the slow deliveries of steel bars there is more contracting ahead in this line than in others, but orders for the second half are being refused at present. The plate mills are showing a disposition to consider less attractive orders than formerly; many sizes that a few weeks ago would have been of little interest are now being bid upon. Few of the pending orders for structural steel have been closed in the past week. Bids were closed Tuesday on the car repair shop, 450 tons, for the Hudson & Manhattan Railway at Jersey City. The McClintic-Marshall Construction Company will fabricate 500 tons for the new puddling mill building for the Reading Iron Company. The 1200 tons of steel for the Rockefeller Building at Cleveland, Ohio, will likely be taken by the Eastern Steel Company. The Central Commercial and Manual Training High School at Newark, N. J., has been awarded to the Glenn Engineering Company as general contractor, and the 1200 to 1500 tons of structural material required will be furnished by the Hedden Iron Construction Company. It is reported that the Lackawanna Bridge Company will fabricate 9000 tons for the Whitehall Building for the Brown-Ketcham Iron Works. The Pennsylvania Railroad is inquiring for 700 tons for signal bridges and also for a bridge at Maryland avenue, Baltimore, requiring 450 tons. C. T. Wills has the general contract for a garage for W. & J. Sloane on West Twenty-ninth street, New York City, which will require about 500 tons, still to be placed. We quote as follows: Plain structural material, New York, 1.66c. to 1.71c.; plates, New York, 1.71c.; steel bars, 1.66c., and bar iron, from 1.70c. to 1.80c., according to the grade and quantity.

Ferroalloys.—It is probable that some lots of ferromanganese can be picked up at around $44, but buyers are scarce, and if they should happen to come into the market for any large amounts the price would probably stiffen. Ferrosilicon is plentiful and $62.50 seems to be the price for delivery over the first half and $63.50 over the second half, but few transactions are reported.

Cast Iron Pipe.—Both municipalities and private water and gas companies are evidently influenced by the less favorable general conditions, as the public lettings are few and small, while the purchases by private companies have shown a notable diminution. Carload lots of 6-in. are quoted at $25.50 to $26 per ton, tidewater.

Old Material.—Transactions are few and far apart. A little business is being done in cast scrap, borings, turnings and wrought pipe, some inquiry developed for car wheels in the early part of the week, and some special qualities of wrought scrap are under negotiation, but in all other lines extreme dullness prevails. Nearly all the steel mills are embargoed, and those which are not in this condition are refusing to take shipments on contracts. When embargoes are lifted it is only for a day or two at a time. One cause of the frequent embargoes is that a great deal of steel scrap is still due on contracts taken at recent high prices, and as soon as an embargo is lifted deliveries are rushed in from all sides. The recent decision of the Treasury Department enlarging the classes of scrap to be admitted at $1 per ton duty has caused a great deal of foreign scrap to be offered for sale here. While prices on a few kinds of old material have gone off, most kinds cannot be bought cheaper from the dealers, who are generally in good financial condition and refuse to sacrifice their holdings. On the other hand, consumers are expecting to purchase considerably cheaper. Practically a deadlock is thus created. An encouraging feature is the fact that this month's railroad lists are barely half as large as usual, thus showing a diminution of the supply from this source, while good prices are stated to have been obtained. The following quotations are per gross ton, New York and vicinity:

Rerolling rails	$15.50 to $16.00
Old girder and T rails for melting	14.50 to 15.00
Heavy melting steel scrap	14.50 to 15.00
Relaying rails	20.50 to 21.00
Standard hammered iron car axles	25.00 to 26.00
Old steel car axles	19.50 to 20.00
No. 1 railroad wrought	17.00 to 17.50
Wrought iron track scrap	15.00 to 15.50
No. 1 yard wrought, long	15.00 to 15.50
No. 1 yard wrought, short	14.50 to 15.00
Light iron	9.00 to 9.50
Cast borings	9.50 to 10.00
Wrought turnings	11.50 to 12.00
Wrought pipe	14.00 to 14.50
Old car wheels	15.00 to 15.50
No. 1 heavy cast, broken up	14.50 to 15.00
Stove plate	11.50 to 12.00
Locomotive grate bars	11.50 to 12.00
Malleable cast	16.50 to 17.00

The annual banquet of the Engineers' Society of Western Pennsylvania was held in the Fort Pitt Hotel, Pittsburgh, on the evening of January 29. There was a reception from 6.30 to 7 p.m. to enable the members to become better acquainted with one another. More than 300 members sat down to the banquet. Among the speakers were George H. Neilson, toastmaster; President E. K. Morse, Dr. J. A. Holmes, director technologic branch of the United States Geological Survey; Rev. Dr. Maitland Alexander, George C. Johnson, M. D., Frederick L. Bishop, the new head of the Physics Department of the University of Pittsburgh, Dr. Walther Riddle was chairman of the Entertainment Committee.

Alex Laughlin & Co., engineers and contractors, Lewis Building, Pittsburgh, have practically completed their contract with the Republic Iron & Steel Company at Hazelton, Ohio, which covers the building of 18 gas producers and two-lap, two-butt, two-bending and two-socket furnaces for the manufacture of wrought pipe. They are also finishing work on three gas fired continuous furnaces in the rod mill department of the Southern Iron & Steel Company, Alabama City, Ala.

The Titan Steel Casting Company has purchased the business of Benjamin Atha & Co., Newark, N. J. It will continue to operate the plant as in the past, giving special attention to the production of cast steel bolsters, manganese steel railroad motor gears and pinions, and other car and locomotive castings. The officers of the new company are as follows: Benjamin Atha, president; Louis A. Shepard, vice-president and general manager; Henry G. Atha, treasurer; C. W. Owston, Jr., secretary.

The Central Tube Company, Lewis Building, Pittsburgh, Pa., has issued a new card of discounts on steel pipe, which are subject to the usual trade customs. This company has now direct representatives as follows: Olin, Giberson & Hilands, Inc., 2 Rector street, New York; H. A. Leslie, 615 Ashland Block, Chicago; H. A. Fuller Iron & Steel Company, 701-702 Century Building, St. Louis; Eugene C. Saul, Monadnock Building, San Francisco.

Metal Market.

NEW YORK, February 9, 1910.

THE WEEK'S PRICES.

Cents per pound.

	Copper.			Lead.		Spelter.	
Feb.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
3	13.87½	13.62½	32.50	4.70	4.60	6.12½	5.87½
4	13.87½	13.62½	32.45	4.70	4.55	6.12½	5.87½
5	13.75	13.50	....	4.70	4.55	6.12½	5.87½
7	13.75	13.50	32.50	4.70	4.55	6.12½	5.87½
8	13.75	13.50	32.50	4.70	4.55	6.12½	5.87½
9	13.75	13.50	32.60	4.70	4.55	6.12½	5.87½

The entire metal market is in a discouraging condition, which many people attribute to the uncertainty of the Wall street situation. The copper trade is marking time in anticipation of the forthcoming monthly statistics to-morrow. Spot tin is still cornered in New York, lead is weaker in St. Louis and the spelter market is in bad shape.

Copper.—There is little to be said about the copper situation and prices yesterday and to-day were entirely nominal, as both buyers and sellers are awaiting the publication of the statistics for January, which are due to-morrow. The tone of the market is contradictory. Some people can see nothing good in the outlook for the future, as they declare that even a curtailment will not have much effect on the market, as they feel that stocks are too heavy, while others think that the conditions will be bettered after to-morrow. A careful survey of the market to-day failed to bring to light any transactions of consequence and electrolytic copper has been freely offered at 13.50c., without takers. The situation of lake copper is perhaps a little better than electrolytic, although buyers are so few that it is difficult to make any possible statement as to what the metal might be worth if quantities of any size were asked for. Reports from abroad show that the speculative interests there are trying to keep the market up, and the operations seem to be entirely on the bull side. It is believed there that the reduction of copper for January will be about 10 per cent., and it appears that those reports have been made by American representatives of London houses. We quote electrolytic to-day at 13.50c. and lake at 13.75c. If there is any buying following the statistics, however, these low prices may not prevail longer than 24 hours. The arrivals of copper so far this month have been 12,202 tons. Spot copper sold in London to-day for £59 8s. 9d. and futures for £60 6s. 3d. The sales amounted to 1200 tons of spot and 1200 tons of futures.

Waterbury Average.—The Waterbury average for January was 13.87½c.

Pig Tin.—Spot tin is in about the same condition as it was last week, but as there is little or no bidding the parties who are holding it so closely are getting but little satisfaction out of the situation. Prices during the week have been hovering around 32.50c. and the range of fluctuations was closer than it has been in many weeks. The last three weeks in the pig tin market have been the dullest in several months, and consumers are buying the metal only as they need it. Even the speculators in tin are taking but little interest in the situation and the most interesting feature of the market is the fact that the United States Steel Corporation has protected itself against any possible bull operations by purchasing and holding all the tin it may require for some time to come. The arrivals of pig tin so far this month have been 820 tons, while there are 5045 tons afloat. The London market was steady to-day and spot tin sold for £147 17s. 6d. and futures brought £149 10s. The sales were light, amounting in all to only 180 tons of spot and 100 tons of futures.

Tin Plates.—The tin plate situation remains practically unchanged. If anything the demand has fallen off slightly, as some can manufacturers have bought all they need for the time being. The mills are still crowded with orders, however, and independents are getting premiums. 100 lb. coke plates remain at $3.84. The upward movement in foreign tin plates has stopped for the time and Swansea plates remain at 13s. 4½d.

Lead.—There seems to be a surplus of lead in St. Louis and the independents are offering it freely at 4.55c. The market there is decidedly uncertain, and it would not surprise some sellers if the market broke lower. In New York the market is firmer than it is in the West, and the leading interest continues to ask 4.70c., while outsiders are demanding 4.72½c. to 4.75c.

Spelter.—The spelter market is quite ragged, and it is being freely offered in the New York market at 6.12½c. There are some reports of sales at lower prices, and both consumers and sellers are watching the situation closely. Those who need the metal are buying it only as they need it and there is a strong impression that the market will go lower. In St. Louis spelter has declined to 5.87½c., and the situation there is decidedly uncertain. Lower prices than these are quoted, but they may not be based on actual quotations.

Sheet Zinc.—The ruling price of sheet zinc was reduced on February 7 to $7.50 per 100 lb., basis, less 8 per cent. discount, f.o.b. cars, at the works. This is the second reduction within two weeks, as the price on January 29 was reduced to $7.75.

Antimony.—The looked for higher prices in antimony have not materialized, which is largely due to the general demoralization of the metal market. There is more antimony on hand than the sellers anticipated, and the cheaper grades have come into the market in such large quantities as to affect sales of the better known brands. Hallett's is held at 8.25c., Cookson's can be had at 8.50c., and the Hungarian grades can be obtained for 7.50c.

Old Metals.—The market is unsettled, but dealers' selling prices are nominally unchanged, as follows:

	Cents.
Copper, heavy cut and crucible	13.25 to 13.50
Copper, heavy and wire	12.75 to 13.00
Copper, light and bottoms	11.75 to 12.00
Brass, heavy	9.50 to 9.75
Brass, light	7.75 to 8.00
Heavy machine composition	12.25 to 12.50
Clean brass turnings	8.75 to 9.00
Composition turnings	10.25 to 10.50
Lead, heavy	4.40 to 4.50
Lead, tea	4.05 to 4.15
Zinc scrap	5.00 to 5.25

Iron and Industrial Stocks.

NEW YORK, February 9, 1910.

Liquidation has continued, the only variation from this unsatisfactory condition being that it was somewhat less urgent on some days than on others. The steadily depressing influence is the expectation of undesirable legislation at Washington. Undoubtedly solid ground will eventually be reached, but whether this is to be expected soon is a problem. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	11⅛- 12⅓	Railway Spr., com.	35 - 40
Allis-Chalm.. pref..	36 - 42	Railway Spr., pref.	101 -103¾
Beth. Steel, com...	26½- 28¾	Republic, com.....	33¼- 35½
Beth. Steel, pref...	53 - 58	Republic, pref.....	99 -100½
Can, com.....	10 - 11¼	Sloss, com.....	71½- 75
Can, pref.....	72 - 75	Sloss, pref.....	116⅞-117
Car & Fdry, com..	56⅛- 62½	Pipe, com.....	23 - 26
Car & Fdry, pref..	115 -117	Pipe, pref.....	75 - 78
Steel Foundries...	54⅞- 59	U. S. Steel, com...	75 - 80⅞
Colorado Fuel.....	32½- 36	U. S. Steel, pref...	116½-120½
General Electric...	147½-151	Westinghouse Elec.	62 - 69¾
Gr. N. ore cert....	63½- 71	Va. I., C. & C.....	63 - 63¼
Int. Harv., com....	83⅛-*87	Am. Ship, com.....	72 - 72½
Int. Harv., pref....	122	Am. Ship, pref.....	111
Int. Pump, com....	43½- 48	Chi. Pneu. Tool...	39½- 40
Int. Pump, pref....	82½- 85½	Cambria Steel.....	45¼- 48½
Locomotive, com...	45⅝- 50¾	Lake Sup. Corp....	21½- 24
Locomotive, pref...	110 -111½	Penn. Steel, pref....	113½
Nat. En. & St.,com.	20¼- 23	Warwick	11⅛
Nat. En. & St.,pref....	90½	Crucible St., com..	13⅜- 15⅝
Pressed St., com...	35¾- 39⅞	Crucible St., pref..	83 - 88
Pressed St., pref..	100½-102¼		

* Ex dividend.

Last transactions up to 1 p.m. to-day are reported at the following prices: United States Steel common 77, preferred 118½, bonds 104; Car & Foundry common 58½, preferred 117¾; Locomotive common 46¾, preferred 110; Colorado Fuel 35⅛; Pressed Steel common 37, preferred 102; Railway Spring common 36¾; Republic common 34, preferred 99; Sloss-Sheffield common 73; Cast Iron Pipe common 23½, preferred 75½; Can common 10½, preferred 73⅞.

American Radiator Company directors have voted to cancel $2,000,000 preferred stock authorized but unissued, and to replace it witih $2,000,000 common stock. This will leave the outstanding capital at $10,000,000. It is the intention to issue $800,000 of the new common stock to shareholders at $150 a share, in the ratio of one new share for each 10 of old.

Dividends.—A dividend of 1¾ per cent. on the preferred stock, payable March 1, has been declared by the United States Cast Iron Pipe & Foundry Company.

The Sloss-Sheffield Steel & Iron Company has declared a quarterly dividend of 1¼ per cent. on the common stock, payable March 1.

The 22-in. structural mill at the Clairton Works of the Carnegie Steel Company has rolled its first beam. This is the fourth finishing mill to be added to this plant. An 18-in. bar mill and a 22-in. structural mill were completed and put in operation in 1905, while in 1908 a 14-in. structural mill was added. Originally, nothing beyond billets was rolled at the Clairton Works, but it is now a very large producer of not only billets, but also steel bars and structural shapes.

The Machinery Trade.

NEW YORK, February 9, 1910.

Judging from the large number of orders that are coming to the New York machinery houses from day to day it appears that the present month will be a big one in the machinery trade as far as business placed in New York territory is concerned. The receipts of the average machinery house in this vicinity during January were not as large as they were in the month of October and November in many cases, which is due to the fact that during the early part of the month inquiries were plentiful but orders did not come in in any great volume. Toward the last of the month, however, there was a strong buying movement, which has increased in the last week. There are a large number of inquirers who are asking for immediate quotations and who declare that they must have their equipment as early as possible and will place orders accordingly, which is taken as an indication that business will continue good.

The Baltimore & Ohio Railroad has been placing some orders against its large list it has had before the trade, and the Lozier Motor Company, Plattsburg, N. Y., has been buying extensively against a big list of requirements which was issued several months ago. Another large buyer of late has been the firm of James Cunningham, Son & Co., Rochester, N. Y., and a number of the smaller automobile manufacturers have been placing orders for some good sized business. It is understood that the Bethlehem Steel Company will close out its list very shortly, as machinery selling men who are familiar with the affairs of the company declare it is their intention to put the proposed additions to the machine shop equipment in service as early as possible. There are no new lists before the trade at present, but machinery men who are familiar with conditions in the South declare that a number of railroads in that territory are preparing to make purchases shortly. The Pennsylvania Railroad has a few inquiries out for machine tools, but nothing in the nature of a list.

There is a decidedly strong demand for second-hand machines and boilers, and second-hand tools of all kinds are being held at a premium. The recent call of the Bethlehem Steel Company for a large list of special machinery has brought a number of users of that class of equipment into the market for second-hand machinery, in consequence of which good prices are being obtained for second-hand machinery of a class that ordinarily does not bring anywhere near its original cost when offered at resale.

The International Steam Pump Company is making purchases covering a general line of machine tools and other machinery apparatus for all of its plants. These expenditures were provided for by the company some time ago, when a large appropriation was made. A foundry is being built at the Henry R. Worthington plant, Harrison, N. J., and at the Laidlaw-Dunn-Gordon Company plant, Elmwood Place, Ohio, an extension is being made to the main foundry building, which will be 120 x 160 ft., and will be served by two 10-ton traveling cranes. A 6-ft. span traveling crane will also be installed in the foundry yard. At the Snow Steam Pump Works, Buffalo, N. Y., a one-story addition, 50 x 175 ft., is being made to the machine shop. Minor improvements are also being made to the Blake & Knowles Steam Pump Works, East Cambridge, Mass., and the Dean Steam Pump Company, Holyoke, Mass. F. A. Harris, purchasing agent for the company, has been sending out the inquiries.

The American District Steam Company, Lockport, N. Y., is buying just now for extensive additions to its plant at North Tonawanda, N. Y. The company will erect a machine shop which will be approximately 100 x 260 ft. in size and two stories in hight. In addition to utilizing the structure as a general machine shop, a testing room, pattern shop and carpenter shop will be installed in the building. Work on the structure will be commenced about April 1, and it is hoped to have the building completed and equipped by the end of July. When the machine shop is constructed the offices of the company will be removed to Tonawanda and the entire plant will be located in that city, with the exception of a branch office and storehouse which will remain in Lockport.

A hydroelectric plant capable of developing 4000 hp. will be established by the Blue Ridge Power Company near Creighton, Ga. The construction contract has been secured by Frank B. Gilbreth, Inc., 60 Broadway, New York. The work will include the building of a Ransom hollow dam, 42 ft. high and 6000 ft. long, and a reinforced concrete power house. The Hydraulic Properties Company, 60 Broadway, New York, furnished the designs for the plant and will be consulted in reference to machinery requirements. The power will principally be used by the Franklin Pyrites Company.

Requirements for Two Technical Schools.

As a result of a gift of $250,000 to the Sheffield Scientific School of Yale University, New Haven, Conn., for the establishment of a laboratory mechanical engineering school, it is thought that before long the faculty of this school will be in need of considerable in the way of mechanical equipment. It is understood that the Board of Trustees of the school will provide a site for the laboratory, which will be known as the Mason Laboratory of Mechanical Engineering, and Charles C. Haight of New York has been selected as the architect. Construction on the building will be begun July 1 next, and it is the programme to purchase the initial equipment as soon as possible .

It will not be long before the city of Newark, N. J., will purchase a good sized lot of machine tools to be installed in the proposed commercial and manual training high school, for which bids were opened several days ago. The H. C. Stowe Construction Company of New York was the lowest bidder on the work and agreed to build the school for $547,029.50, which was within the appropriation set aside by the Board of Education. This work, it is understood, includes the completion of the building only, together with the necessary plumbing work, &c., and the machine tool equipment will be purchased separately.

Bids will be opened on February 17 by the City Clerk of Erie, Kan., for furnishing material and constructing systems of water works, electric light and sewers. The equipment required includes a steel tank of 70,000 gal. capacity, two 300 G. P. N. horizontal duplex compound noncondensing pumps, two boiler feed pumps, boilers, generators, transformer, &c. Details as to the size of the equipment needed can be obtained from Burns & McDonnell, engineers, Scarritt Building, Kansas City, Mo.

The Jamestown Metal Furniture Company, Jamestown, N. Y., is in the market for a line of equipment such as is used in sheet metal work. This will include power punches, forming presses and the like, and it will be installed in an addition the company is making.

The Standard Sanitary Mfg. Company, Louisville, Ky., is planning for some extensive improvements. The company proposes to go into the manufacture of brass on a larger scale than has been done heretofore and is contemplating the erection of a large machine shop and annealing department as well as a new box factory. The proposed improvements have not been entirely decided upon as yet, and it is stated that it will be 30 days before the company's plans are matured.

The Mack Brothers Automobile Company, Allentown, Pa., which has been buying machinery in this market for the last few months, now has inquiries out for a fair sized assortment of machinery and machine tools to add to its general manufacturing facilities.

The Niagara Machine & Tool Works, Buffalo, N. Y., has not as yet decided on the equipment for the plant the company proposes to build adjoining the New York Belt Line in that city. As has been stated, the company is planning to erect a machine shop, 200 x 200 ft., and other buildings. It is probable that later on the company will come into the market for a good sized list of machinery requirements.

The Otis Elevator Company, New York, is buying a few tools to be installed in an addition which is being made to its Buffalo plant. Some equipment which is in other shops will be moved to the new building, and it is stated that the purchases will not be very heavy. The company placed some fair sized orders with dealers in the New York market during the week.

Power equipment will be required by the American Patent Leather Company, Newark, N. J., for a new plant which the company will shortly erect on the Newark meadows. The main building of the plant will be 100 x 200 ft. in size, and it will be two and three stories in hight. There will be a number of smaller buildings and the plant will be used for making patent leather. The company has a plant at present on Walnut street, Newark, and can be addressed there.

The Newark Rivet Works, 262 Lafayette street, Newark, N. J., is spending about $10,000 in the erection of three additional stories to an existing one-story brick building, 50 x 100 ft. in size. The addition will be used for the manufacture of automobile wind shields, and sheet metal working equipment will be installed.

H. H. McNaughton of the McNaughton Foundry, Charlotte, Mich., has leased the plant of the Golden Rule Stove Company of Maryville, Tenn., and the equipment in the Charlotte plant will shortly be moved to Maryville, where the company will continue the manufacture of the McNaughton sectional grate bar and other specialties. Additional equipment will probably be needed at the new plant.

The Penn Steel Casting & Machine Company, Front and Penn streets, Chester, Pa., is making an addition to its chipping department which will greatly increase its facilities. Work on the building is now under way.

The Valley Boat & Engine Company, Baldwinsville, N. Y., has commenced work upon the erection of a factory at Saginaw, Mich., where the company will move the equipment of its present plant about March 1. The company will manufacture materials from which a motor boat or yacht hull of the latest design can be made. The company will not manu-

facture engines, but new departments will be added from time to time.

The New York & Cleveland Gas Coal Company, Pittsburgh, will shortly open up large coal mines in Belmont, Westmoreland County, Pa. The plans for the new enterprise, including a 4000-ton tipple, power plant and railroad sidings, have been made, and considerable equipment used for mining coal will be needed.

The United Indurated Fibre Company, Lockport, N. Y., which was recently acquired by the H. W. Johns-Manville Company, has let contracts for three reinforced concrete buildings, each 100 x 200 ft., two stories, which it will add to its plant, for the manufacture of asbestos goods in addition to the fiber ware which it has heretofore made. A large amount of new machinery is to be installed, and it is stated the total cost of the improvements to be made will approximate $900,000.

A pumping plant for water and sewage is proposed at Liverpool, N. Y., where the municipal authorities are expected to take action in the near future.

One or more additional boilers may be installed before fall by the Sayville, L. I., Electric Company, Sayville, N. Y., and the capacity of the power plant increased.

A water tube boiler of 500 to 600 hp., with supply pumps, will probably be needed very shortly by the Holmesburg, Tacony & Frankford Electric Railway, Tacony, Pa. It is also reported, although without confirmation, that a steam turbine generating unit of 300 kw. will be purchased.

A gyratory breaker of large capacity will be added to the crushing plant of the Clinton Point Sand Company, Clinton Point, N. Y.

Plans for a hydroelectric plant to be built by the Coshocton Light & Heating Company, Coshocton, N. Y., are rapidly being matured.

The Ware County Light & Power Company, Waycross, Ga., has practically decided upon the installation of a gas producer and gas engine. Purchase of machinery, however, will not be made before spring, nor has the size of the plant been determined.

An electric generating unit, electric crane of large capacity and a line of motors for operating machinery will be required for a plant to be built by the Niagara Machine & Tool Company at Buffalo, N. Y. The plans have not yet been fully worked out.

A large new plant will be erected at Syracuse, N. Y., by the Brown-Lipe Gear Company's successor, the Brown-Lipe-Chapin Company, including a separate power house with electric generating machinery. Plans are now in progress.

The Flannery Bolt Company, Bridgeville, Pa., will install additional equipment, including an electric power plant of about 300 hp., the contract for which has already been let.

In about a month the Morgan Portland Cement Company, Allentown, Pa., will take bids for machinery to be installed in a new 2000-bbl. plant. Power to the extent of 2000 kw. will be provided for, but it has not yet been decided whether to install producers and gas engines or boilers and Corliss engines or steam turbines. The fact that direct current is favored will, however, be likely to eliminate turbines from consideration, as they have only proven satisfactory in large sizes for driving alternating current dynamos. The cement making machinery to be purchased includes rotary kilns, crushers, tube mills and pulverizers, or ball tube mills, elevators, conveyors, coolers, packers, &c. Further requirements comprise a steam shovel, hoist, tipple, locomotive, cars, &c.

A report from Elmira, N. Y., states that the Overland Automobile Company, Toledo, Ohio, has acquired the Payne shops there and will remodel them for the manufacture of motor car parts.

John H. Smith, Dolgeville, N. Y., is reported to be in the market for woodworking and electrical apparatus.

A gas engine power plant, with suction producer, will be installed in a new factory to be built at Waverly, N. J., by Samuel Jones & Co., whose address is given as 7 Bridewell place, London S. E., England. Howes & Morse, New York City, are understood to be in charge of the plans of the building.

An electric dynamo for lighting service will be provided by the Oak Duke Lumber Company for its plant at Wellsville, N. Y.

Construction of a modern high duty pumping plant is under consideration at Milledgeville, Ga., although the proposed equipment will not be of large capacity.

It is reported that generating machinery will be required in the near future by the Central of Georgia Power Company, Macon, Ga., for a new electric plant. Plans are now in progress.

Plans are being prepared by the Knickerbocker Cement Company, Hudson, N. Y., for a large plant to be erected shortly at Fountain Head. Rotary kilns and a heavy line of crushing, grinding, pulverizing, power and other machinery will be required. Electric motors are to be used for driving all of the apparatus in and about the mills.

The Atlantic & Gulf Portland Cement Company, William B. Shaffer, president, Nazareth, Pa., has plans prepared for an addition to its Ragland, Ala., cement factory. All equipment has been provided for, but more may be needed later.

Philadelphia Machinery Market.

PHILADELPHIA, PA., February 8, 1910.

The trade has been giving a large share of its attention during the past week to matters pertaining to the several large lists which have been issued in this territory. The requirements of the Bethlehem Steel Company, which cover a large range of tools, will, it is understood, be placed in the near future, as bidders have been urged to get in their estimates and it is not unlikely that some of the orders may be placed during the week. The list of the Norfolk & Western Railroad is also being figured on by both merchants and manufacturers in this vicinity. We can learn of no definite business placed by the Baltimore & Ohio Railroad against its recent list. Local railroads have not come into the market in any extensive way; the Pennsylvania, however, has inquiries out for several large punches and shears. A few small lists ranging up to six or more tools have developed from industrial concerns, but little business of any size has been done. Immediate sales have been somewhat irregular; single tool transactions covering the general range of tools, mostly in the medium sizes, are reported, although considerable business of this character is pending, which, owing to the press of the more extended inquiries which have developed, have probably not been so closely followed. The trade has probably more business under consideration than at any one time for several years, and the outlook for more active conditions in the near future is most favorable. Should the many tools now inquired for develop into orders in a reasonable time, the market would, no doubt, be pretty well cleaned out of desirable sizes of quite a few classes of tools and the trade would then be again considerably handicapped in the way of making deliveries.

Manufacturers, as a rule, show somewhat greater activity; there has been quite a fair volume of general business originating in various sections of the country on which different builders are figuring. The demand for tools of the heavier type has been more pronounced, particularly those of a somewhat special nature. The scarcity of good mechanics is still reported by some manufacturers. Very little business has developed in the export trade. A fair volume of business has been done in power transmission specialties, but there has been almost an entire absence of demand on the usual standard types of equipment.

The second-hand machine tool business has been a trifle more active; the bulk of the demand has been of a small size individually, but a better demand is anticipated as deliveries harden for new equipment. Business in new power equipment of the medium capacities is a shade better, while some fair business in that of the larger horsepowers is under consideration.

The demand for steel castings continues active; foundries are pretty actively engaged and deliveries are steadily hardening. General gray iron foundries report new business as being somewhat irregular. The demand for machinery castings, however, shows some little betterment.

The Sussex Light & Power Company, Laurel, Del., whose power equipment requirements were referred to in last week's report, now advises us that it is their intention to purchase a Russell engine and a Fort Wayne generator.

The Hess Machine Works notes quite an improved demand for its line of file-making machinery, as well as special tools. The past few months have been the most active since the depression, and the plant is now running at about full capacity. Present orders include three sets of file-making machines for export to Russia, and two sets for Sweden. Orders for a number of machines for Western delivery, as well as six sets for Eastern delivery are also reported.

The Richmond Forgings Corporation, Richmond, Va., which was understood to be in the market for a gas engine and producer plant, advises us that it has about concluded to use electric power for a time, which will be furnished by a local plant. It has not fully determined whether a gas power plant will serve its purpose.

The Philadelphia Roll & Machine Company reports conditions as somewhat easier since the first of the year. A good volume of business for chilled and sand cast rolls, charcoal iron castings and general machine work is on its books, and the plant is being operated at about normal capacity. The outlook for business is considered good, although few large propositions are being figured on. This concern will ship next week a complete 26-in. sheet mill.

Fels & Co., soap manufacturers, Seventy-third and Woodland avenue, have acquired eight acres of ground adjoining their plant on Glenmore avenue, south of Island road. An addition to their plant will ultimately be erected on the site, but nothing of a definite nature has been decided upon.

The Standard Pressed Steel Company reports January as being a very fair month. Business has had a tendency toward irregularity, but on the whole is satisfactory. The foreign demand has not been heavy, orders have been numerous, but small individually. The domestic trade has been good, and the company's plant continues to be operated at full capacity.

New England Machinery Market.

BOSTON, MASS., February 8, 1910.

The trade is watching sharply the trend of the stock market for any unfavorable effect upon industrial conditions. Thus far no recession in business has been felt by the dealers. Both the machine tool and supply houses had a January which equaled expectations, and February holds up at much the same level. The same statement describes the tool steel market. Jobbers and dealers in metal lines are showing no inclination to curtail their stocks. A small percentage of manufacturers are going a little slow in their buying, and a few of them report a slackening in orders and inquiries, but instances where production has been affected are not at all common, certainly no more so than when the stock market was at its highest. The industrial situation has not steadied down sufficiently to bring a trade which has no fluctuations.

Generally speaking, the opinion in Boston is that the unrest in Wall Street may check the growing demand for manufactured products, but that no permanent injury will be done. The feeling is growing, however, that disturbing elements, notably the agitation for lower prices and proposed Government action on great economic questions, combined with the approaching Congressional elections, may have a tendency to make the advance in business somewhat slower than might otherwise have been the case. Conservative observers would not regret retarding influences if they were not too severe, believing that better results must be obtained if the period of a full demand is reached gradually, rather than as a boom condition, which is more exhausting.

C. C. Putnam & Son, Putnamville, Vt., lumber manufacturers, are in the market for structural steel frame work for a double track lumber carrying tramway, 2500 ft in length, of which 1500 is double track.

The Empire Electric Mfg. Company and B. Lamb & Co., Plainville, Conn., have consolidated in a new corporation known as the Empire Electric & Mfg. Company, with a Connecticut charter, the authorized capital stock being $50,000. B. Lamb & Co. manufacture small ferrules and eyelets, and the Empire Company electric fittings, and the new company will continue both lines. W. H. Johnston, Stapleton, N. Y., is the president, H. E. Propson, Plainville, secretary, and J. E. Lamb, Plainville, treasurer and manager.

J. J. Wehinger, Worcester, Mass., has been made superintendent of the works of the James Hunter Machine Company, North Adams, Mass., builder of textile machinery.

The city of Boston is to establish independent electric generating plants in its large school buildings, the first of which is to be installed in the new high school of commerce, plans for which will be prepared immediately.

Herbert Morris & Bastert Empress Iron Works, Loughborough, England, is contemplating establishing an American plant, and an effort is being made to procure the works for Rutland, Vt.

The engine and boiler room of the Thompson Bros. Drop Forging Company, Southington, Conn., was burned February 7, loss, $10,000. The factory of Charles M. Bearse, Everett, Mass., show counters and druggists' fixtures, was burned February 8, loss, $17,000.

Additions to manufacturing facilities, outside of metal lines, include the following: Neptune Packing Company, sardine packing plant at Boothbay, Me.; Winsted Hosiery Company, Winsted, Conn., four-story brick building, 40 x 90 ft.; Victoria Mills, Thornton, R. I., boiler house of cement and expanded metal; Massachusetts Mills Corporation, Lowell, Mass., increase in capital stock from $1,800,000 to $3,000,000, money to be used for new mills; C. Thairwall & Co., silk manufacturers, Cambridge, Mass., one-story mill, 80 x 190 ft., at Cambridge.

The Yale & Towne Mfg. Company, Stamford, Conn., manufacturer of hardware, chain blocks and electric hoists, is preparing plans for a six-story building, 50 x 265 ft., of mill construction. The space will be used to relieve congestion in some of the departments, in anticipation of increased business.

The Russell & Erwin Mfg. Company, New Britain, Conn., manufacturer of hardware, will erect a new building, of reinforced concrete, 60 x 100 ft., seven stories. It will adjoin the present office building, immediately to the north, and will be used partly for manufacturing, partly for storage and one floor will be devoted to office uses.

The Southington Industrial Association, Southington, Conn., will erect another manufacturing building this season, but no definite plans have been made for it. The association owns the building occupied by the Brass Products Company, manufacturer of electric and combination fixtures, and it is likely that the new structure will be devoted to increasing the company's manufacturing space.

The Snow & Petrelli Mfg. Company, New Haven, Conn. manufacturer of hardware and marine specialties, suffered severe loss in the recent fire, the building, together with the office, being destroyed, while the machinery and stock were considerably injured. Accommodations have been found in the new Smedley Building, 152-156 Brewery street, and the company is now moving in, with the expectation of resuming manufacturing within a few days. Power will be obtained from the local electric distributing plant. The company did not own the old building.

The Weld Mfg. & Supply Company, 79 Milk street, Boston, Mass., manufacturer of sheet metal and wire goods and dies and tools for special work, has increased its capital stock from $25,000 to $40,000, the new money being intended to take care of an increasing business. The controlling interest in the corporation has been purchased by I. H. Kleban, Bridgeport, Conn., in which city the factory is located. G. A. Weld, the former president, has sold his entire holdings, and at the next directors' meeting an entirely new board of officers will be elected.

The plans of the Kennebec Development Company, which will develop the water power of the Moosehead Lake region in Maine, comprise the creation of 91,000 hp. in electric energy and the expenditure of $9,000,000, and afford a striking instance of the potentiality of New England water powers. The work on three dams will begin in the spring. The first, just below the outlet of the great lake, will develop 30,000 hp. A second, below the first, with its crest 123 ft. high and on a level with the tailing of the upper dam, will double the power, which will again be duplicated by a third reservoir of equal hight still farther down the river. The reservoir system will approximate 56,000 acres. Whether or not the plans are carried out to a complete fulfillment at this time, there is no doubt that the development of power as estimated is by no means exaggerated.

The Secor Typewriter Company, Derby, Conn., which will manufacture a new visible typewriter, has completed organization with the election of Frederick A. Richardson as president; C. Downs, vice-president, and Daniel S. Brinsmade, secretary and treasurer. The business is capitalized for $30,000.

Official confirmation has been made of the absorption of the Columbia Motor Car Company, Hartford, Conn., as a part of the United States Motor Company. The Hartford shops will operate as at present, as an independent unit, the new corporations being a holding company only. The statement is made that an annual production of 5000 cars will be set for the Columbia works, which would mean necessary enlargements of manufacturing facilities.

The Merrow Machine Company, Hartford, Conn., manufacturer of textile machinery, has awarded the contract for additions to its works, consisting of a three-story brick building, 47 x 47 ft., a boiler house, 38 x 58 ft., to be equipped with Bigelow boilers, and a five-story tower, 20 ft. square, for toilet rooms and stairway.

The Connecticut River Power Company proposes to install additional units of power at Vernon, Vt., at a cost of $150,000.

The Risdon Tool & Machine Company, Inc., Waterbury, Conn., has been incorporated in Connecticut, with $25,000 paid in capital, to take over the business of the Risdon Tool Works of that city. The company has largely increased its facilities and added new lines. It will design and make dies, models, light machinery and tools, and is fitted for light manufacturing. A specialty will be made of sub-press dies. W. L. Shepard, superintendent of the American Mills Company, Waterbury, is president of the corporation; A. H. Dayton, vice-president, and George T. Wigmore, assistant cashier of the Naugatuck National Bank, Naugatuck, Conn., secretary and treasurer. The directors comprise Mr. Shepard, Mr. Wigmore, C. E. Beardsley, auditor of the American Brass Company, Waterbury; Matthew Adgate, superintendent of the Naugatuck Chemical Company; C. T. McCarthy, secretary of the Goodyear's M. R. Shoe Company, and G. W. Andrews, all of Naugatuck. It is stated unofficially that the company plans to erect new shops later.

J. H. Sessions & Son, Bristol, Conn., manufacturers of trunk hardware, are erecting a one-story addition to their factory and are installing a considerable amount of new machinery which has been purchased. It is planned to carry this building up to the hight of the present structures a little later.

The Oakville Company, Waterbury, Conn., manufacturer of wire and metal goods, has increased its capital stock from $300,000 to $600,000. The new capital does not mean any new departure, but represents in some degree the increase in business as indicated by buildings, machinery and other equipment.

The McCathron Boiler Works, Bridgeport, Conn., has moved into its new building on Knowlton street, doubling its capacity. E. A. Hooper, formerly with H. B. Beach & Son, Hartford, Conn., has been made manager of the business.

The Brown & Sharpe Mfg. Company, Providence, R. I., has brought out a new steel toolmakers' vise, for use in drilling, fitting and laying out work on surface plates and for other classes of work in machine shops.

Chicago Machinery Market.

CHICAGO, ILL., February 8, 1910.

Many of the machinery dealers found the early part of January a quiet period, as manufacturers were so much involved in the trouble of getting coal and materials that they had little time to think about new equipment. During the latter half of the month and the past week the machinery houses in Chicago have had their hands full taking care of customers who come in person to make inquiries or select new machines, and there has also been a good volume of inquiry and sales by mail. The automobile manufacturers have been forgotten as they are buying nothing now excepting an occasional milling machine which is booked for next fall or winter. This week, however, the machinery dealers are receiving many visits from men who are in attendance at the annual show in Chicago.

There will be a disposition on the part of machinery men the coming year to go more cautiously in making large sales to the automobile trade. Last year this trade was like manna in the wilderness, as it came at a time when dealers did not have enough other business to pay rent, but they are going to watch very closely during the coming year the developments and prospects of the automobile business.

The general trade, however, has grown to such proportions that the machinery houses are no longer dependent upon any one line of business, and in some cases they are not exerting themselves to figure on railroad lists, as they find the trade with manufacturers and machine shops more profitable and satisfactory. New manufacturing enterprises and extensions of old plants are assuming a considerable magnitude in the West and this business is very attractive. The machine tool builders are taking good care of the general business. Milling machines are in a class by themselves in the matter of deliveries, and boring mills are booked several months ahead, but in other lines deliveries can be made within a reasonable time.

A power plant designed as a reserve plant for emergencies, and also to be used during low water when all of its water wheel machinery cannot be operated, is being installed by the Portland Railway, Light & Power Company, Portland, Ore. The building will be carried on pile foundations and a concrete mat which will be below the extreme high water line. The basement walls will be waterproof and sufficiently strong to stand water pressure. Generating units to be installed are as follows: One 2000-kw., 575-625 volt direct current railroad generator direct connected to a 32 x 68 x 54 in. cross compound Hamilton condensing engine operated at 90 rev. per min.; one 2000 kw., 2300 volt, and one 11,000 volt, three phase, 60 cycle horizontal Curtis turbine. Surface condensers will be used throughout, with independent wet and dry pumps and centrifugal circulating pumps, direct connected to variable speed motors. The boiler room will contain four batteries of Babcock & Wilcox boilers, each battery containing two boilers, 21 tubes wide by 10 tubes high, and having three 36-in. drums. Experiments are now being conducted at another plant of the company to determine the best type of furnace to be adopted for these boilers. The plant is operated with cut fuel and sawdust obtained from the various mills along the river, part of which is brought in by industrial railroads and part by river barges. In case of failure of the supply, oil is used. Operations are expected to begin by September 1.

The Mishawaka Folding Carriage Company, Mishawaka, Ind., has prepared plans for an addition to its factory 50 x 150 ft., which will be used as an assembling room. The new addition will increase the capacity of the company 60 per cent. The cart being manufactured by the company this year is a new pattern, being made of angle iron, flat wire and steel tubing. The output for 1911 will be about 50,000 carts. The purchase of several punch and drill presses and possibly a machine lathe is being contemplated by the company.

The Packard Motor Car Company, Detroit, Mich., whose present floor space exceeds 23 acres, has under construction over three acres of buildings. Additional buildings recently erected are as follows: Foundry building, building for the exclusive manufacture of Packard motor trucks, two additional stories to the administration building, six story stock building and a five-story machinery building.

The Hudson Motor Car Company, Detroit, Mich., is preparing plans for the erection of a group of factory buildings of reinforced concrete on a tract of land recently purchased, which will represent a total investment of about $400,000. It is proposed to build as soon as the weather will permit, and it is expected to have the new factory ready for the manufacture of automobiles by the latter part of the coming summer.

The Holt Caterpillar Company, Peoria, Ill., has been organized for the manufacture of gasoline caterpillar traction engines. The company has taken over the plant of the Colean Mfg. Company, which will immediately be placed in shape for the manufacture of machinery turned out by the company. The officers of the company are: Pliny E. Holt, president; Ben C. Holt, vice-president; G. L. Dickenson, secretary and treasurer.

The R. J. Irvin Mfg. Company, Indianapolis, Ind., manufacturers of automobile tops and bodies, has increased its capital stock and will erect an addition to its present factory, which will enable it to greatly increase its output.

The National Novelty & Mfg. Company, Terre Haute, Ind., has been organized with capital stock of $10,000 to manufacture a patented sad iron and several other new inventions. The company has a plant fully equipped and expects to begin operations at an early date. All machinery required for the present has been purchased, but it is expected that additional equipment will be required later on.

The Ideal Filter Company, Spokane, Wash., recently organized and incorporated with capital stock of $200,000, is having plans prepared for the erection and equipment of a plant for the manufacture of the Brunner self-flushing water filter. Arvid Routerdahl is president of the company.

The Myers Mfg. Company, Goshen, Ind., has been organized with capital stock of $100,000, to manufacture hoisting and conveying machinery covered by patents held by H. A. Myers. The company has secured a plant which it is equipping with the expectation of having it ready for operation by July 1. A full equipment of boilers and engines has already been installed, but lathes, drill presses, punch presses, &c., are yet to be purchased.

The Jeffersonville Water, Light & Power Company, Jeffersonville, Ind., has been incorporated with capital stock of $150,000. The company is to succeed the Jeffersonville Water Supply Company, the property of which was recently sold at sheriff's sale. The new company is formed for the purpose of supplying the city with pure water for domestic and manufacturing purposes, and to furnish electric light, gas, heat and power and to erect and operate plants to that end.

The Friedman-Shelby Shoe Company, St. Louis, Mo., has absorbed the Giesecke D'Oench-Hayes Shoe Company. The firm is having plans prepared by Eames & Young, Wright Building, St. Louis, for a new factory building of reinforced concrete construction 65 x 134 ft., which is expected to be ready for occupancy late next fall. Information regarding engine, boilers and machinery to be installed may be secured from the architects in charge.

The National Automatic Tool Company, Dayton, Ohio, is making every effort to complete its new plant at Richmond, Ind., with the expectation of having it ready for occupancy sometime in March.

The Southern California Edison Company, Los Angeles, Cal., which for some time has been negotiating for a site on the Long Beach inner harbor and several other places along the coast for the erection of a plant, advises that no decision has been reached as yet. It is the intention of the company to install about 20,000 kw., to be followed by an ultimate installation of from 75,000 to 100,000 kw.

Sealed proposals in triplicate will be received until February 21, 1910, for the construction at Fort Logan, Colorado, of a laundry building and the installation of plumbing, electric wiring, fixtures and motor connections, laundry machinery and equipment, with alternate bids for electrical and steam boilers, engine, feed pump, heating, &c. Capt. Chase Doster, Quartermaster, U. S. A.

Ground has been broken by the Stivers Automatic Cover Company, Salida, Colo., for the erection of a factory building 70 x 100 ft., two stories. The article to be manufactured is a patent automatic cover for covering and uncovering billiard and pool tables. The company will purchase within the next 30 days about $7000 worth of machinery, such as milling machines, screw machines, punch presses, lathes, drill presses, shapers, jointers, planers and a complete outfit of die makers' tools and woodworking machinery.

The Fowler Lamp & Mfg. Company, 2335 Wabash avenue, Chicago, manufacturers of auto lamps and automobile accessories, has purchased a factory site 70 x 75 ft. on Twenty-fourth street, upon which it will erect a three-story factory building of mill construction, which will be ready for occupancy by May 1.

The Lozier Motor Company, Plattsburg, N. Y., has organized a company bearing the same title at Detroit, Mich., with a capitalization of $2,000,000, a large portion of the stock of which will be held by Detroit capitalists. Several options are held by the company and a decision will be made within a short time regarding the location of the factory, which will be erected at an initial expenditure of $1,000,000. Plans for the new factory are being prepared and work will be commenced before March 1. It will be the chief assembling and shipping factory of the company, while the motors and transmissions will be manufactured in the Eastern plant as heretofore.

Cincinnati Machinery Market.

CINCINNATI, OHIO, February 8, 1910.

Business in machinery and machine tool lines for the week has not been unlike that of its predecessor, the opening week of February, but the tone is good and some special lines have had results exceeding any previous week's record of the year. Agitation over the corporation tax, squabbles in Governmental circles and continued delay of the railroads and large manufacturing plants to place orders for needed equipment have all contributed to the lull, which is regarded, even by the least optimistic, as but temporary. Most large tool-making concerns are still either finishing up the annual inventory and reorganization processes and preparing for the expected big business to come early in the spring. There has been no special new business of note, and the expected awards on lists for some large plants in the East and West already mentioned in these columns are still delayed.

Among the lines which report conditions all that could be desired are ice machines and refrigerating machinery. Some excellent business in this and allied lines is opening up with the Middle States manufacturers from Cuba, Texas and the Southwest. The Triumph Ice Machine Company, Cincinnati, has been signally fortunate in getting in on a good part of this business, and has also influenced other orders from the same territory in favor of Cincinnati and Central States manufacturers of allied lines. J. Shipman Louis, an official of the Triumph Company, has recently returned from Havana, Cuba, with an order for a $100,000 refrigerating plant, and bringing with him Lepoldo Superville, president of the Campañia Frigorifica Cubana de Havana, who assisted him in securing many thousand dollars' worth of additional machinery, implements, &c., necessary for the conduct of that company's large business in the Cuban capital. The Havana order calls for a 50-ton plant. At present the daily manufacture of ice in Havana is but 250 tons, which suggests further possibilities to makers of that type of machinery. Another order just received by the Cincinnati concern is one for a 30-ton plant for installation at Lubbock, Texas; another 20-ton plant is to be shipped to the Alfalfa Ice Company, Cherokee, Okla. The company has just finished installing a factory at Dalton, Ga. An inquiry for a plant comes all the way from Greece.

The latest reports from those interested indicate that the Steel Foundry Company, Winton Place, Cincinnati, which was recently purchased under receivership proceedings by R. L. Barrett, Philadelphia, is to be started up in April. One installment has been paid on the purchase price, and another one is due April 1.

At the annual meeting of stockholders of the Lunkenheimer Company, Edmund H. Lunken, Samuel L. Moyer, Renry Ritter, David C. Jones, William H. Muench, J. H. Fred Schaefer and George H. Riddell were elected directors, all re-elections save one. The officers elected are Edmund H. Lunken, president; Samuel L. Moyer, first vice-president; J. H. Fred Schaefer, second vice-president; William H. Muench, treasurer; David C. Jones, secretary, and Henry Ritter, superintendent. Work on the new brass foundry building, a splendid example of heavy concrete construction, and installation of machinery, &c., is being rushed, and it is expected to be in operation within a few months.

Foundries are keeping up their good records, and the melt is constantly increasing; it is expected that ere midsummer the best normal records will have been reached.

Dealers for the most part are noncommittal. They report business satisfactory and prospects good. There is some demand for second-hand tools, with an unusual scarcity of the product, for which top prices are asked.

Local iron and steel men in all branches are taking an interest in the preparations of the special committee to work in conjunction with the Cincinnati Convention League for securing the 1911 State convention of the retail hardware dealers. A special trainload of boomers and delegates will go to Toledo to attend the 1910 annual, which convenes in that city February 22.

Upon petition of the National Inland Printer Company, Chicago, Charles C. Marshall of Shelby County, Ohio, was appointed receiver for the National Folder Company, Sidney, Ohio, in $8000 bond.

Directors of the Yost Gearless Motor Company, Springfield, Ohio, have effected a reorganization, and it is reported that as soon as a suitable location can be found they will build a factory and enlarge. George L. Miller, who was for two years the manager of the company, has purchased the stock owned by William Hope of the Springfield Brass Company, and has added to his title of manager those of secretary and treasurer.

It is announced from Hamilton, Ohio, that on March 1 the Hamilton Machine Tool Company, which has for some time maintained a handsome suite of temporary offices in the Rentschler Building, in that city, will move its executive offices and sales department to the new location in Lindenwald, a suburb.

It is expected that the recent court experiences through which the Huron Steel & Iron Company of Norwalk, Ohio, has gone will result in that concern being soon placed on a permanent and solid financial basis. The receivers are Attorney E. C. Martin, Norwalk, and the Cleveland Trust Company, and it is stated that the appointment of these officials will have no effect on the lease of the steel plant acquired the week previously by the Galesburg Coulter Disc Company, nor on the lease of the Kavanaugh, or tool, department which was made two weeks previously. It is expected that the plants will likely be purchased by the bondholders, who will effect a reorganization immediately.

At the annual meeting of the stockholders of the Buckeye Steel Castings Company, Columbus, Ohio, S. P. Bush, R. S. Warner, John C. Deshler, T. P. Linn and C. B. Goodspeed of Columbus, and Frank Rockefeller of Cleveland, and Thomas Goodwillie of Baltimore, were re-elected directors of that institution. Mr. Bush was re-elected president and manager, Mr. Warner first vice-president, Mr. Rockefeller second vice-president, and Arno Eberlein was made secretary and treasurer. In his annual report President Bush showed that orders are heavy for equipment; plant in operation to capacity, and earnings for the year a large increase over those for the big year of 1908, and with both regular dividends on common and preferred stock paid. The company has erected several large buildings of steel construction, installed a new machine shop and has in contemplation more buildings to care for its rapidly increasing business.

Cleveland Machinery Market.

CLEVELAND, OHIO, February 8, 1910.

The local machine tool market is again beginning to show some life. The demand on dealers for standard tools was light during the entire month of January. During the past week, however, considerable improvement has been noticed in the volume of inquiries, as well as in actual orders, and the outlook is more promising than it has been before since the first of the year. Sales during the week were confined mostly to single tools. There is an improvement in inquiries from automobile manufacturers for milling and drilling machinery for future delivery. Little business has come from this source since the first of the year. Some inquiry is also beginning to come out for small tools for repair shops in connection with new garages. New automobile manufacturing companies that are being formed and others that are already making plans for the erection of good sized plants are expected to bring out some good orders for machine tool equipment during the next few months.

Builders of foundry equipment report a good demand for their products. Makers of malleable castings are generally very busy at present. Railroads have bought in good volume, and there is an increased demand from implement manufacturers and other users. With the satisfactory condition of the trade some of the malleable plants are adding to their capacity and new plants are springing up in various sections.

The general outlook among manufacturing plants in metal working lines is very satisfactory. In some quarters apprehension was felt during January over the falling off of orders, but this let-up was by no means general, and seems to have been only temporary. Manufacturers, as a rule, are optimistic of the future and there are many reports of plans being made for plant enlargements, the work to start as soon as the weather permits building operations.

The Basic Steel Company, Niles, Ohio, which was recently organized to build a basic open hearth steel plant, announces that its plans are completed and it expects to place contracts for its building and equipment during the present month. The plant will have a daily capacity of about 500 tons of billets and sheet bars.

The Sheffield Realty Company, Lorain, Ohio, is negotiating for the sale of the Brown-Cochran gas engine plant in that city, which has been idle for some time, and the chances are said to be good that the plant will soon be occupied by another manufacturing concern.

Considerable interest was taken by local machine tool houses during the past week in the sale at public auction of the equipment in the McLean Arms & Ordnance Company's plant in this city, including about 35 machine tools. The plant was sold to the Pattison Supply Company for $15,000.

The Board of Education of Cleveland has taken action toward acquiring a site for a new technical high school to be known as the West Side Technical High School. The first technical high school in the city was opened in the fall of 1908, and since it started there has been a general demand for a similar school on the west side of the city. It is expected that the new school will be built in time to be opened in the fall of 1911.

Representatives of the Lauth-Jeurgens Motor Company, Chicago, have been in conference with business men in Fre-

mont, Ohio, during the past few days in regard to the removal of the company's plant to Fremont. It is expected the company will establish a plant in the latter city for the manufacture of automobiles and auto trucks.

The National Sanitary Mfg. Company, Salem, Ohio, manufacturer of bathtubs and other plumbers' supplies, has increased its capital stock from $200,000 to $300,000.

To effect a reorganization of the shovel manufacturing business that has been conducted in Cleveland under the name of the Chisholm Steel Shovel Works, the William Chisholm Sons Company has been incorporated, with $200,000 capital stock, and the business will hereafter be conducted under that corporate name. No plant extensions are planned.

With an authorized capital of $20,000, the Model Electric Company, Malvern, Ohio, has been incorporated by L. Conrad, H. C. Long, H. W. Pennock, A. B. Bucklin and W. F. Weaver.

At the recent annual meeting of the Marion Steam Shovel Company, Marion, Ohio, Arthur E. Cheney, secretary and sales manager, tendered his resignation, and Robert Reidenbaugh was elected in his place as secretary and director. Other officers chosen were as follows: George W. King, president and general manager; Frank A. Huber, vice-president and treasurer, and B. P. Sweeney, general superintendent.

The Adamson Machine Company, Akron, Ohio, has completed its new plant, which has about three times the capacity of the present one. The plant consists of a machine shop and foundry, each 80 x 160 ft., two stories; a blacksmith shop, 40 x 80 ft., and a power house, 40 x 80 ft. The machine shop and foundry are equipped with 15-ton electric cranes.

The Marion Steam Shovel Company, Marion, Ohio, is in the market for three 6-ft. radial drills.

The New York Central Lines have an inquiry out for a 42-in. tire turning lathe.

The Chamber of Commerce of Amherst, Ohio, has taken up the matter of raising stock subscriptions for building a new water works plant for that village, and it is expected that sufficient capital will be secured for carrying out the project.

The structural steel fabricating plant of the Cowing Engineering Company, Cleveland, was sold at sheriff's sale February 4 to the Citizens' Saving & Trust Company, Cleveland. The bank held a claim against the property for $95,000 and bid in the plant at $113,300.

Milwaukee Machinery Market.

MILWAUKEE, WIS., February 8, 1910.

The machinery market here at present is of the quiet, steady character most conducive to profitable trade. Orders received by Wisconsin tool builders and other manufacturers have been based of late almost entirely upon quality and delivery, and a large percentage is being let without competition. For single machines and small groups prices also range somewhat higher than a month ago, with advancing tendency. In respect to contracts of any size, however, the situation is more difficult to summarize; its trend seems to be upward.

The most striking feature of the general industrial situation is the extent to which shops in every part of the State, as well as across the border to the West and Northwest, are going over to the automobile business. Preparations for engaging in the manufacture of motor vehicles or their parts, including gasoline engines, have recently been made by some of the largest concerns in this section of the country, among which are carriage and wagon makers, manufacturers of agricultural implements, power machinery builders, iron and steel founders and machinists, and owners of metal working plants of various kinds. Quite a number of firms and companies have also been organized for the same purpose, but, unless identified with financially strong established interests, the new concerns are starting out in rather a small way, as capital does not seem to be attracted to an absolutely untried business, no matter how promising its prospects may be. Companies changing over to this industry or adding it to an existing line are what count. Such manufacturers find as a rule that very little of the equipment already in service in their shops can be utilized or spared for the new work, consequently orders from this class of trade to tool builders, power machinery builders and others are certain to be very heavy as long as the present tendency remains unchecked. Much new building, works extension, &c., is also necessitated, making a good demand for structural materials and apparatus used in construction work.

Among the more immediate requirements of local plants, apparatus used in connection with sheet metal, for cutting, shearing, beveling, bending, drilling, spacing, punching, perforating, welding, &c., has recently been prominent; and this is one of the lines along which a strong demand cannot fail to develop throughout the year. Applications of sheet metal in building construction, as well as for industrial purposes in great variety, have increased to such an extent throughout the Northwest that a conservative estimate places them as at least 20 per cent. greater than three years ago, and some authorities do not hesitate to go as high as 50 per cent. A part of the increase is also due to the growing use of laminated iron and steel punchings in the building up of cores, spiders, poles, &c., for electrical machinery, the manufacture of which has fully trebled within the period mentioned, so far as actual production in this State is concerned. With the completion of new buildings for the great plant at West Allis it will be considerably greater.

Another field of marked activity is in the sale of rock and ore breakers of the heavy gyratory type, as well as some jaw breakers of unusual size. Large orders for crushing machinery are now in the shops of the Power & Mining Machinery Company, the T. L. Smith Company and the Allis-Chalmers Company, and a Washington dispatch states that the last-named has been awarded a contract for a machine with 3½-ft. opening, having a capacity of 8000 tons of rock in 10 hours if fed to that extent. This will be installed by the Isthmian Canal Commission in the ballast plant at Porto Bello, Panama.

Machinery for pattern shops, woodworking plants, planing mills and furniture factories sells to good advantage at this time, and Wisconsin manufacturers who make a specialty of supplying those classes of trade find themselves in a very fortunate position. Almost without exception they weathered the panic in excellent financial condition, and they utilized the dull period for so extending their shop facilities that they now have capacity for a large production, much more so than builders of metal working tools. This situation is apparently in strong contrast to that reported from some other parts of the country, notably the East, but it easily confirmed.

For use in plants such as those just mentioned, the Pawling & Harnischfeger Company, Milwaukee, has designed a new type of monorail hoist, which travels at the rate of 700 ft. per minute and has a lifting capacity of 3 tons. It is also found of great service in connection with the lumber yards of manufacturing plants, storage yards, &c., facilitating the disposal and transferring of material.

Preliminary plans have been prepared by the city engineer for the new pumping plant at La Crosse, Wis., and purchase of the machinery recently mentioned in *The Iron Age* will be considered before long. Intending bidders should familiarize themselves with the local conditions.

A new plant for the production of metal novelties will be established at Oshkosh, Wis., by the Northwestern Mfg. & Plating Company, which has concluded arrangements for leasing a factory. Most of the equipment needed, which at present is not very heavy, has been provided for.

A new plant of the C. A. Krause Milling Company, Milwaukee, which replaces one that burned about two months ago, will be electrically operated throughout, power to be supplied by a steam turbine and generator of about 500 kw. capacity. Boilers, condenser, pumps, blowers, elevating and conveying machinery will also be among the requirements of the mill, with possibly some repair equipment.

The Racine Mfg. Company, Racine, Wis., has definitely determined upon the erection of a new plant there, and equipment is being installed in temporary quarters. The scope of the company's operations will probably be extended to include complete automobiles, thereby necessitating a much more comprehensive line of shop tools, forging and foundry machinery than the old works required.

Plans have been practically completed for reorganizing the Prescott Company, Menominee, with a working capital of about $500,000 or over, and the plant will continue to be operated along the same lines as heretofore. It now includes some of the largest and best equipped shops north of Milwaukee.

The city of Dodgeville, Wis., has placed an order for the building and erection of a 50,000-gal. steel water tank with the Kennicott Water Softener Company, Chicago Heights, Ill.

Machine shops to be used principally for automobile repair work have been established at Jefferson, Wis., by John E. Engel, and at Green Bay, Wis., by W. H. St. Johns, owner of the Green Bay Motor Car Company.

The Miller-Saw Trimmer Company, Milwaukee, has, according to a report from Cadillac, Mich., given the Board of Trade there assurance that it will build a shop in that city for the manufacture of its machine. Equipment already in service here can be utilized, but a new plant will need quite a number of new tools.

The McDonough Mfg. Company, Eau Claire, Wis., has secured a large contract for machinery with which to equip the Peavy-Byrnes Company's new plant at Kinder, La., which will be operated as a branch of the Mansfield, La., business.

Joerns Bros., Stevens Point, Wis., have organized a company for the manufacture of automobiles and motor trucks, engaging C. A. Joerns of Sheboygan as manager. A plant at St. Paul, Minn., now controlled by these interests will be remodeled and new machinery installed for the purpose.

Hydraulic turbines, electric generators, transformers, governors, exciters, motors, switchboard and heating apparatus will be required for a new power plant to be built near Mellen, Wis., by the Ashland Light, Power & Street Railway Company. Complete specifications will be ready shortly.

The Albrecht Mfg. Company, Kewaunee, Wis., has had plans prepared for a new factory building, and bids on the structural iron are about to be taken. Considerable equipment will be required.

The Badger Meter Company, Milwaukee, has taken a contract from the city of Springfield, Ill., for 275 meters. This is a local industry which has been developing very rapidly.

The plant of the American Machine Company, Eau Claire, Wis., which manufactures a patented automobile specialty, has just been put in complete operation.

The Manitowoc Boiler Works, Manitowoc, Wis., has a contract for two steel frame digesters for the new sulphite mill of the Wausau Paper Company at Brokaw, Wis. This is a line of equipment which has heretofore been purchased almost entirely outside the State, although there are Wisconsin plants in which paper making machinery is built.

Installation of four alternating current generators of 2000 kw. output, driven by hydraulic turbines, is contemplated by the Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis., which has had plans prepared for a hydroelectric power development at Cedar Falls, including the erection of a 50-ft. dam.

The Berlin Machine Works, Beloit, Wis., is finding a particularly active market in the Southwest at present. Among recent installations is that of a new type of fast feed dresser and matcher in the planing establishment of the Dayton Lumber Company, Dayton, Texas.

From Nashville, Tenn., it is reported that the 20,000,000-gal. pumping engine, built for that city by Allis-Chalmers Company at the Reliance Works in Milwaukee, which has an unusually high lift, and is claimed to be the most powerful machine of its type in the world, reached a duty of 181,000,000 foot-pounds during the recent official trial, largely exceeding the contract guarantee. The economy in the use of coal through the use of the new pump and improved water tube boilers is estimated to be between 30 and 50 per cent., as compared with the equipment which they displaced, basing the figures on the same delivery of water.

A. L. Folk, Reading, Pa., has been placed in charge of the new automobile department of the Racine Sattley Company, which is now taking up the manufacture of automobile bodies, and will be in a position before the end of the year to turn out complete machines. The new departure will necessitate the eventual purchase of a large line of shop tools and other equipment.

The Milwaukee Concrete Mixer & Machinery Company, recently organized here, has started manufacturing in one of the shops of the R. J. Schwab & Sons Company, with which it is partially identified, and a complete mixer of the new type will be exhibited this month at the Cement Show in Chicago by the inventor, W. J. Roseberry. This concern will need considerable equipment during the next few months and also expects to be a steady buyer of gasoline engines, electric motors and other accessories used in construction work.

New machinery has recently been installed by the Wisconsin Handle Company in the old Pankratz plant at Sturgeon Bay, Wis., the capacity of which is to be utlimately enlarged.

From Manitowoc, Wis., it is reported that Charles Stewart of Chicago will build an electric power plant, turbine driven, at Cato Falls. Further particulars are lacking.

The commercial interests of Appleton, Wis., are endeavoring to locate a large pump manufacturing plant there. Negotiations have been opened with a Chicago concern.

The Bucyrus Company, South Milwaukee, has put in operation a new four-cycle, double acting tandem gas engine and generator of 300 kw. output for supplying electric current to the motors operating machinery in its plant.

As an auxiliary to its power house equipment the Mitchell-Lewis Motor Company, Racine, Wis., has installed a gasoline engine of 500 hp., said to be among the largest of the type ever built.

The Richards Iron Works, Manitowoc, Wis., recently alluded to in this report as a possible future builder of automobiles, is experimenting with a new type of gasoline motor, upon the successful operation of which the plans for the proposed extension of its business are contingent. If these are consummated it will mean the purchase of a large line of machine tools and other equipment for extensive new shops.

Matthew Weber, La Crosse, Wis., has been granted a patent for an improved pattern wheel to be used for heavy auto vehicles. Tires are displaced by an internal spring arrangement which is said to have the same cushioning effect, and the parts are interchangeable. A. J. Frogue, Kansas City, Mo., also participated in the invention, and a company will probably be organized for manufacturing the device at some point in this State.

A belted generator of 100 hp., with exciter, will be installed by the Cream City Sash & Door Company, Milwaukee, to furnish alternating current for operating motors.

The Gisholt Machine Company, Madison, Wis., will have considerably enlarged facilities by fall, including foundry, machine shop and power house additions, if the plans recently made public are fully carried out. The company is doing the largest business in its history.

The Thomas B. Jeffrey Company, Kenosha, Wis., as a part of projected extensions will install an engine driven alternating current generator of about 1500 hp.

The J. I. Case Threshing Machine Company, Racine, Wis., will add several motors to its shop equipment.

Miscellaneous Machinery and Power Equipment.

The Big Bend Water Power Company, Spokane, Wash., will be in a position shortly to consider the purchase of turbines, generators and other equipment for the new power plant which it has prepared to build on the Spokane River. Electric current is to be supplied industrial plants in and around Spokane, and a transmission line will be run to mines in the Cœur d'Alene District of Idaho.

A pump driven by two hydraulic turbines will be bought by the Riverton Consolidated Water Company, Riverton, Pa., for its new water works station.

Extension of its power facilities will be required this year by the Alabama City, Gadsden & Attalla Railway Company, Gadsden, Ala., when a line to the industrial plants at North Gadsden is completed.

An electric generator driven by gasoline engine or other reliable form of prime mover is to be added to the plant of the Federal Clay Products Company, Mineral City, Ohio.

A pumping plant will be built in the spring by the West Charleston, W. Va., Water Company, recently organized.

One or more pumping units of moderate capacity will be purchased this summer for municipal water works at Oakland, Ill.

A steam turbine of 1500 hp. direct coupled to an alternating current generator will be installed in the Gentry, W. Va., power plant of the New River & Pocahontas Consolidated Coal Company, together with auxiliary machinery. It is also reported, although without direct confirmation, that a large line of electrically operated mining and coal handling equipment is to be purchased during the year.

Construction of a pumping plant and system of water distribution is being planned at Georgetown, Ill.

The Evington Manganese Company has been organized by M. G. Saunders to mine and handle manganese iron ore in the vicinity of Evington, Va. The purchase of considerable equipment is said to be contemplated.

A twin engine 22 x 36 in. for belt drive will be installed by the Westport Lumber Company, Westport, Ore., together with other machinery.

Power machinery will be needed before fall for the Wheeling, Cadiz & Tuscarora Traction Company, Cadiz, Ohio, which has contracted with the Electric Traction Construction Company, Kansas City, Mo., for building its line.

A municipal power and lighting plant, probably equipped with steam turbine and generator, will be built this year at Muskegon, Mich., if the present plans of the authorities are carried at an approaching election.

Power and cutting machinery will be provided for a new mill which the W. M. Ritter Lumber Company, Columbus, Ohio, plans to put in operation early next fall. Some of the equipment has already been purchased.

Improvements in its electric plants will be provided for this year by the Cincinnati Traction Company, Cincinnati, Ohio, which has urgent need of more power for operating its now extensive system. Definite plans have not, however, been announced.

Work on the new hydroelectric plant of the Boston-Colorado Power Company, Boulder, Colo., which was recently referred to, will begin about April 15. Preliminary plans covering the turbine and generator equipment are now in progress of preparation.

A belted electric dynamo of 400 kw. capacity, together with exciter and auxiliary machinery, will be installed this spring by the Anamosa-Oxford Junction Light & Power Company, Anamosa, Iowa.

Air compressors and other machinery will be required in the near future by the Ameranza Mines, Hillsboro, N. M.

An electric power plant may be built this year by the Chicago, Burlington & Quincy for serving its station and terminals at Burlington, Iowa. No definite plans have yet, however, been given out, and purchase of equipment is not understood to have been as yet authorized.

The pumping station at Waterloo, Iowa, which is operated by a public service corporation, will be purchased by the city and increased in capacity, necessitating the installation of a modern pumping engine. The matter is, however, not likely to come to a head for several months.

Machinery for a concentrating plant will be required in

the near future by the Bisbee-Sonora Mining Company, Paradise, Ariz., together with power equipment for operating it.

Contract for the erection of repair shops will be let shortly by the Winona Interurban Railway Company, Warsaw, Ind. Machine tools, motors and probably a small crane and hoist will be purchased.

Preparations are being made to operate the plant of the Greers Mfg. Company, Greers, S. C., with alternating current motors.

Boilers with automatic stoker furnaces, engines, electric generators, an exceedingly large line of motors, variously stated at from 80 to 120, and special operating machine will be required for the new King mill at Kalamazoo, Mich. Bids are now being taken there by Dan J. Albertson, and contracts will be awarded by or shortly before February 15.

A crushing plant with five heavy stamps, the capacity of which is to be increased as production warrants, will be provided for the ore reduction works of the Victor Power & Mining Company, Knob, Cal.

A number of alternating current motors of large size will be installed by the Dunbar Stone Company of Detroit, Mich., at its River Rouge plant, together with other machinery, which has already been provided for.

The Johnson-Rowe-Paige Company, Omaha, Neb., is installing a complete power plant and vacuum heating system for the Loose-Wile Company's factory there, with duplicate equipment in one operated by the same company at Kansas City, Mo. All apparatus is to be motor driven.

Some machines for repair work will probably be required in the near future by the Twin City Rapid Transit Company, Minneapolis, Minn., which is proceeding with plans for the erection of a shop in connection with new car barns.

The authorities at Salem, Ill., are credited with the decision to install water works machinery in a municipal pumping plant to be built this spring.

It is expected that the Roanoke Stamping & Enameling Company, Roanoke, Va., will keep in continuous operation this year the plant occupied by its predecessor, which has been closed for some time. Later on additional equipment will probably be installed.

A compressor with capacity of 500 cu. ft. of air per minute will be required at the county rock quarry in Pasadena, Cal., together with other machinery.

A water works system, with pumping station, is being planned for installation by the municipality at Virden, Ill.

A dynamo of about 300 kw. output is to be added to the municipal power and lighting plant at Niles, Mich.

Machinery will be provided by the Empire Mfg. Company, Goldsboro, N. C., for a new plant 150 x 250 ft., which is to be completed by summer.

The municipal authorities at Shellman, Ga., have decided upon the purchase of a fire pump and some other equipment.

The Crawfordsville, Ind., Electric Light & Power Company may build an entirely new generating station to be equipped with steam turbines similar to those which a local traction company recently installed.

A pumping unit for municipal water service is likely to be bought this year at Galesburg, Ill.

A steam turbine of 1000 hp., driving centrifugal pump with capacity to deliver 30,000,000 gal. daily, may be installed this year in Station No. 1 of the Louisville, Ky., water works. Plans to that end are now being drawn.

The American Granite Company, Milwaukee, Wis., will be in the market for crushing machinery and an air compressor, to be installed at its Lohrville, Wis., quarry.

A boiler plant, Corliss engine, electric dynamo and motors will be among the requirements of the Bryant Paper Company for its new mill at Kalamazoo, Mich., referred to in *The Iron Age* some weeks ago.

An increase in the capacity of its power plant, probably necessitating considerable additional machinery, will be made before long by the Muskegon Traction & Light Company, Muskegon, Mich.

Machinery for increasing the capacity of its pumping plant and electric power station will be contracted for in the near future by the Nebraska City, Neb., Water & Light Company.

Construction of a large hydroelectric power development is being planned by the Corona Copper Company, Prescott, Ariz. The details of the machinery required, including turbine driven generators, have not yet been worked out.

The Acme Mfg. Company will erect a new factory at San Marcos, Texas. Equipment has been provided for.

Berkholtz & Strenfort, Hull, Iowa, will install a dynamo for electric lighting, having acquired a franchise from the city. It will be operated in connection with the power plant of a new mill.

Additional concentrating machinery will be required this season for the ore reduction works of the Bunker Hill & Sullivan Company at Kellogg, Idaho.

The Security Cement & Lime Company of Baltimore, Md., whose purchases of power machinery have recently been referred to in *The Iron Age*, have contracted with Chalmers & Williams, Inc., Chicago, for a No. 9 and two No. 6 gyratory crushers of the Kennedy type.

The Baton Rouge, La., Water Company has decided upon increasing the capacity of its pumping station, and additional machinery will be provided.

The Osborn & Sexton Company, Columbus, Ohio, is filling an order for machinery to be installed in the new woodworking plant of the Jewett Car Works at Newark, Ohio. Additional equipment for these shops will be needed during the year to provide for the increasing demands of the business, as all car builders are behind on orders.

The Powhattan Brass & Iron Works, Charleston, W. Va., is proceeding with plans for extending its capacity.

A hoisting engine and steam shovel will be among the requirements this season of the Glen-Gery Brick & Cement Company, Reading, Pa.

An additional pumping unit will be installed this year in the water works at Arkansas City, Kan., if plans now under consideration are adopted.

A motor-driven shaker screen is to be installed in the near future at the headworks of the People's Coal Mining Company, Weaverton, Ky., as a part of improvements recently decided upon.

Some additional equipment will be bought shortly for the power plant of the Gurley Light & Power Works, Huntsville, Ala., including a feed water heater.

A boiler shop 30 x 50 ft. and forge shop 24 x 50 ft. will be built by the Zach Taylor Lumber Company, Chattanooga, Tenn., to be used in repair work. Contracts for the apparatus needed have already been let, but more may be required later.

A new electric power plant to be operated by hydraulic turbines is likely to be built this year by the Winchendon, Mass., Electric Light & Power Company.

A horizontal high pressure turbine, to operate condensing, will be installed by the Greenfield, Mass., Electric Light & Power Company in a new power house to be erected shortly. Contract is reported to have been already placed with the General Electric Company.

Two twin engines, with cylinders 20 in. and 24 in. stroke, have been put in operation at the plant of the Tacoma Mill Company, Tacoma, Wash. Some additional equipment will be needed by fall.

Plans for a new pumping station and filtration plant at Flint, Mich., are being prepared by Wm. G. Clark of Toledo, who has been acting as supervising engineer of the system recently installed there. Machinery requirements for the Flint water works have not yet been determined upon.

Additional power equipment will be provided for the plant of the Harvel Tile & Cement Company, Harvel, Ill. Address Joseph Molohon, manager.

Work on the new steam turbine generating station of the Kentucky Electric Company, Louisville, Ky., will be started about April 15. The main equipment has been provided for, but there is considerable auxiliary machinery to be purchased later.

The United States Portland Cement Company, Denver, is preparing to enlarge its plant at Florence, Colo., and a line of modern machinery, with increased power equipment, will be purchased in the near future.

A municipal electric station to furnish power and lighting will probably be built this year at Lompoc, Santa Barbara County, Cal.

A large electric crane and an electric hoist will be purchased shortly by the Monarch Fertilizer Company, Fort Wayne, Ind., in connection with plans for a new plant.

The Singer Mfg. Company is completing plans for the erection at Truman, Ark., of a large cutting and veneer plant, for which power and operating machinery, including boilers, heater, pumps, engines, generator, motors, &c., will probably be required, as it is to be laid out on the most modern lines.

Contract for the new municipal incinerating plant at Portland, Ore., has been let to the Willamette Steel & Iron Works.

Equipment will be required shortly by the Albia Interurban Railway, Albia, Iowa, for a machine shop to be used in repair work.

The Washington Brick, Lime & Sewer Pipe Company, Spokane, Wash., will install a power plant consisting of two 600-hp. boilers, feed water heater, pump, Corliss engine and transmission machinery. The contract has already been let. Operating equipment for new works will also be provided.

The Board of Public Works, Hancock, Mich., will receive bids until February 14 for a centrifugal pump electrically driven, particulars in relation to which can be obtained by addressing Charles B. M. Craig, city engineer.

Plans are in progress for reconstructing and enlarging the dynamo station of the Boone Electric Company, Boone, Iowa. The details may be obtained by direct application a little later on.

The Belleview, Ind., plant of the National Automatic Tool Works has been practically completed. Equipment sufficient for present requirements has been provided, but more will be needed by fall.

Some new apparatus, including an electrical unit, will

probably be needed this year for the municipal power and lighting plant at Springfield, Ill.

A line of electric motors, probably direct current, will be bought for the reconstructed shops of the Fletcher Stamping & Enameling Works, Anderson, Ind. The list has not yet been decided upon.

Some additional power machinery will be needed this spring for the generating station of the Ringtown, Pa., Electric Light, Heat & Power Company. For particulars address the company direct.

The National Adjustable Chair Company, Greenfield, Ind., whose plant burned out long ago, is completing plans for a new structure which will be equipped with the most modern motor driven machinery. Detailed specifications are not yet ready.

Pumping units and other machinery will probably be purchased this year at St. Joseph, Mich., for a water purifying plant similar to that which has been in successful operation at Columbus, Ohio.

The Eclipse Development Company, Rhyolite, Nev., will install a 10-stamp crushing plant and other machinery.

The construction of a pumping station, with engine driven direct acting pumps, is under consideration at Hamburg, Ala.

An alternating current generator driven by 1200 hp. engine will be installed by the Great Western Portland Cement Company in the plant at Mildred, Kan., together with auxiliary apparatus.

The Brown Lumber Company, Traverse City, Mich., will install six alternating current motors of the squirrel cage type for operating machinery in its new plant, erection of which is about to be started. Blowers for a dust collecting system will also be needed.

An electric power plant is to be constructed at Onekama, Mich., by the Northern Michigan Transportation Company. For details address the main office at Manistee, Mich.

A steam boiler of 150 to 200 hp. capacity will be purchased by the De Land Electric Light, Power & Ice Company, De Land, Fla., together with other equipment.

The Interurban Electric Company, Carterville, Ill., will require a steam turbine and alternating current generator with rated output of 500 kw. at 80 per cent. power factor, together with equipment for a complete power unit.

The capacity of the municipal power and lighting station at Ashtabula, Ohio, will be enlarged and the equipment improved. Plans are now being completed.

New boilers, Corliss engine, condenser, pumps, generator, exciter, &c., will probably be required for the power station of the Anderson Electric Light Company, which contemplates enlarging its capacity. Definite plans will be made by the first of next month.

Some additional machinery for the municipal pumping station will be required this year at Shellman, Ga.

Qualey Bros., Chihuahua, Mexico, will build a hydroelectric power plant in connection with the Yoquivo mine. The plans are definitely made, but purchase of machinery will not be considered for some months yet.

From Anoka, Minn., it is reported that Valentine Bros., Minneapolis, are considering the erection there of a plant for manufacturing gasoline engines.

The construction of a pumping plant and complete system of water distribution is under consideration at Boaz, Ala.

The building of a power station, in which steam turbines may be adopted as prime movers, is being planned by the El Reno Interurban Railway Company, El Reno, Okla.

A Corliss engine generating unit of 1000 kw. will be installed by the Durham, N. C., Traction Company if present plans are consummated. An addition to the power station is now being designed.

From Portland, Ind., it is reported that the Portland Body Works Company, recently organized there, contemplates the erection of a new plant unless suitable shops can be leased. Equipment details have not yet been worked out. Automobile bodies and parts will be the products of the company.

A power plant and pumping station is to be built at Benton, Ill., by the Hamilton Utilities Company, which has obtained a public service franchise there. Machinery is not understood to have been as yet contracted for.

The Langner Mfg. Company, Cleveland, Ohio, which has been operating overtime in order to take care of the demand for its products, will probably be compelled to provide for some extensions in the near future, with consequent need of additional equipment.

It is probable that a pumping unit will be required this year for municipal water works at Tarboro, N. C.

A new Corliss engine will be needed in the near future for the plant of the Vestal Lumber & Mfg. Company, Knoxville, Tenn.

A factory, with electric power equipment, will be built at Flint, Mich., in May or June by the Auto Top Mfg. Company. Plans are now being drawn.

A gasoline engine driven hoist will be installed by the Southern Yavapai Mining Company, Stanton, Ariz.

Construction of a pumping plant and complete water works system has been practically decided upon at Frontenac, Kan., and purchase of the machinery will be made as soon as the details have been fully worked out.

Plans are being prepared by the Pitcher Mfg. Company, Minneapolis, Minn., for the erection of a factory in which to produce agricultural machinery, particularly a patent shocker. Further information can be obtained in due course from E. Pitcher, president of the company.

The Chandler & Price Company, Cleveland, Ohio, will take bids shortly on power and operating machinery for new factory buildings, erection of which is to begin in the spring. The Cleveland Engineering Company is in charge of the plans.

The Nash Electrical Company, Albuquerque, N. M., has received contract for the heavy motors to be used in driving pumps at the new water works plant.

The Engineers Fuel Engineering Company, Chicago, will take bids in a few weeks on water tube boilers aggregating about 1500 hp. in capacity, together with other power plant machinery, for a new industrial establishment in Cleveland owned by the Leisey interests.

The capacity of the water works at Eureka, Ill., will be largely increased if the recommendations of the city engineer are approved.

A tandem compound condensing Corliss engine of 200 hp., with steam generating plant complete, will be purchased shortly by the L. G. Campbell Mfg. Company, Blooming Prairie, Minn.

The Lorenson Mfg. Company, Rock Island, Ill., is establishing a plant for the manufacture of a new type of mowing machine. Information concerning equipment has not been given out.

A mixed pressure steam turbine has been put in service and thoroughly tried out in the power plant of the E. K. Wood Lumber Company, South Bellingham, Wash., with very satisfactory results. It normally operates on exhaust steam, but if there is not sufficient of this to carry the load, the machine automatically takes on enough live steam to keep it up to the required speed.

A Corliss engine, boilers, crushing and grinding machinery, presses, &c., with possibly a dynamo and line of electric motors, will be purchased this spring by the newly organized Farmers' Co-Operative Brick & Tile Company, Mason City, Iowa, for a new brick making plant. For information address T. L. Fleming, manager.

The American Oilfields Company, Los Angeles, Cal., will install a large pumping and air compressor plant on its properties in the San Joaquin Valley.

A large gyratory breaker is to be added to the equipment of the Detroit Vitrified Brick Company, Detroit, Mich.

Municipal water works are likely to be constructed this year, with motor-driven centrifugal pumps, at Las Cruces, N. M.

A boiler, pump and motor for use in a hot water heating system is to be purchased by Fitzpatrick & Hoepfner, Toledo, Ohio, for the new federal building.

Plans for a hydroelectric plant of enormous capacity are being made by the Davenport, Iowa, Water Power Company, which has been granted a franchise by the city and is also said to have concluded arrangements with numerous industrial plants for the use of electric power.

New equipment is to be purchased shortly for the municipal pumping plant at Fort Wayne, Ind., as forecasted in *The Iron Age* some time ago.

A plant is to be built at Greenville, Miss., if negotiations now under way are consummated by the Glen Allen Wagon Works. For information address the Business Men's League.

An engine of 75 to 100 hp. dynamo, switchboard and other apparatus will be installed before fall by the Ariston Ice & Electric Company, West Palm Beach, Fla.

The La Porte Electric Company, La Porte, Ind., has increased its capital stock to $300,000, which was found necessary to finance the extensions that have been and will be made to its plant.

The Spokane Asbestos Fire Brick Company, whose principal factory is located at Spokane, Wash., has several points in view for the installation of branch factories for the manufacture of its product.

The Fountain-Shaw Engineering Company, Houston, Texas, is preparing plans for the construction of an electric light plant and water works system at Bryan, Texas.

The Moore Mfg. Company, Muncie, Ind., recently incorporated and capitalized at $100,000 to manufacture furniture, has practically completed its plant, which has a floor space of over 60,000 sq. ft. The company has purchased and installed all equipment required for the present.

The Peerless Water Softener Company has been organized at Indianapolis, Ind., and incorporated with $25,000 capital stock, to manufacture water softening machinery. The directors are H. B. Smith, W. A. Dodge, F. H. Dedert, H. A. Davis and J. W. Davis.

The Factory Club of Martinsville, Ind., has signed a contract with unnamed manufacturers of clutch pulleys and gasoline engines to establish a plant in that city. Two acres have been selected for the factory site, the main building of which will be 50 x 150 ft.

The Indian Refining Company will spend $1,500,000 in enlarging its plant at Lawrenceville, Ill. Seven 250 hp. boilers will be added and eight 1250-gall. stills, 50 storage tanks will be built and a pumping station erected on the Embarrass River. A wax making plant will be a new feature.

The Evansville & Terre Haute Railroad Company will build large coal docks at Evansville, Ind., on the river front. J. O. Crockett, Evansville, is general superintendent.

The Wabash Mfg. Company, manufacturers of wagons and sleds at Wabash, Ind., has entered into a contract to move its plant to Terre Haute, Ind.

Mayor Finley H. Gray of Connersville, Ind., and Councilmen Perry Ferguson and Wm. M. Sanders have been appointed a committee to report on the best system for obtaining an adequate water supply for the city.

C. D. Hodge & Co., Watertown, N. Y., have received contract for the extensive power plant which the Oswegatchie Light & Power Company will build on the Oswegatchie River at Gouverneur, N. Y. Fourteen hundred horsepower will be developed from a head of 24 ft. The power house will be of concrete 38 x 50 ft., in which will be installed two Morgan Smith turbine wheels.

The Board of Public Works, Hancock, Mich., A. F. McDonald, secretary, will receive bids until February 14 for a single acting triplex plunger pump of 350-gal. per minute capacity; also for motor, switchboard, &c.

The City Council of Bluffton, Ind., will purchase a new engine for the municipal electric light plant.

The Southern Indiana Railroad Company will build an additional roundhouse at Terre Haute, Ind., to cost $100,000.

Steam turbines and generators of 4000 hp. capacity, tubular boilers, condensers, pumps, heater, transformers, rotary converters, switchboards, &c., are among the requirements of the Sioux City & Spirit Lake Railway Company, Sioux City, Iowa, for a new power house and substations.

Government Purchases.

WASHINGTON, D. C., February 8, 1910.

The Isthmian Canal Commission will soon call for bids for two horizontal duplex pumps, one hoisting engine and a lot of machinery supplies.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids February 1 for the following machinery:

Class 1. One 21-hp. marine motor engine—Bidder 7, P. F. Butler, Vallejo, Cal., $820.

Class 31. Twenty steam turbo-generator wireless telegraph sets—Bidder 43, Marconi Wireless Telegraph Company of America, New York, $5708.60; 51, National Electric Signaling Company, Pittsburgh, Pa., $3850; 2, American Wireless Company, Boston, Mass., $5250; 59, Radial Telephone Company, New York, $3900; 70, Tulefunken Wireless Telegraph Company, Philadelphia, Pa., $4001 and $4150; 73, United Wireless Telegraph Company, New York, $4358.

The Isthmian Canal Commission, Washington, D. C., opened bids January 28 for the following:

Class 1. One 75-ton wrecking train—Bidder 17, Bucyrus Company, South Milwaukee, Wis., $14,250; 46, the Industrial Works, Bay City, Mich., $13,900; 58, Manning, Maxwell & Moore, New York, $14,930.

Property of the National Steel Foundry Company to Be Sold.—Pursuant to an order of the Superior Court for New Haven County, Conn., dated January 25, the receivers will sell at public auction, on the premises, at New Haven, Conn., March 21, at 12 o'clock, noon, all the lands, buildings, machinery, plant and equipment of the National Steel Foundry Company and all other personal property, except cash on hand, as a whole or in one lot, to the highest bidder therefor, but at not less than $80,000, of which 5 per cent. is to be paid at the time of sale and the balance upon confirmation of the sale by the court and the conveyance of the property free and clear of incumbrances, save only the rights of way heretofore given to the American Steel & Wire Company or its predecessors in interest. The plant to be sold includes about 8⅓ acres of land, with the railroad siding and water front for dockage. The main building is about 128 x 420 ft. The equipment includes two 25-ton acid open hearth furnaces and gas producers, three 30-ton and one 40-ton electric traveling cranes, electric motors, machine tools, saw machines, &c. The buildings were erected specially for the steel foundry business. H. Stuart Hotchkiss and Frederick B. Farnsworth, New Haven, Conn., are the receivers.

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Trade Publications.

Seamless Tubing and Electric Welding.—The Standard Welding Company, Cleveland, Ohio. Three pamphlets. The first deals with the seamless steel tubing made by this firm and used for the magazine tubes of repeating rifles, bicycles and motor cycles, automobiles, metal bedsteads, elevator cages and numerous other things. Tables of the standard sizes of tubing and illustrations of special shapes which this company has manufactured are included. The second pamphlet illustrates a great variety of welds made at the shops of this firm by electricity and contains a list of parts which are regularly welded by them. The third pamphlet pertains to the line of seamless steel rims for all kinds of vehicles and trucks which this company manufactures. This includes four sizes of cylinder rims, special rims for the Goodyear, Goodrich, Firestone, Trident and Fisk automobile tires, rims for bicycles and motor cycles, and a great variety of rims of channel and other cross sections.

Electrical Appliances.—General Electric Company, Schenectady, N. Y. Five bulletins and one pamphlet. Bulletin No. 4703-A describes in detail the company's variable release air brake equipment, which it is stated eliminates the defects usually found in the standard automatic air brake equipment for electric service and makes it possible to handle a long train with nearly the same facility as single cars can be controlled with the straight air brake system. No. 4706 illustrates and describes the type CR curve drawing ammeters and voltmeters for either direct or alternating current manufactured by this company, which give clear and permanent records of the characteristics of the circuits to which they are applied. No. 4711, superseding Nos. 4381 and 4492, treats of small alternating current switchboard panels for use where only one exciter and one generator are installed. Panels for both two-phase and three-phase circuits are listed with connection diagrams, and dimensions and capacities are given. No. 4712 takes up the question of increasing the net output of a noncondensing engine plant without using any additional steam by installing exhaust steam turbines. It contains three reprints, one from *Power and the Engineer* which is a paper presented by W. S. Twining and W. C. Kerr before the Philadelphia Section of the American Institute of Electrical Engineers, describing the exhaust steam turbine plant installed at one of the power houses of the Philadelphia Rapid Transit Company; a second from *Textile Manufacturers' Journal* of an article by Morris B. Carroll, entitled "Increasing the Output of Steam Plants," and the third from the *General Electric Review* of some notes on the low pressure turbine by the same author. No. 4713 describes two forms of oil break switches, gives the capacity of the circuits they will rupture and contains diagrams of the connections of these switches. Pamphlet No. 4707, entitled "Gasolene-Electric Plants for Lighting and Power," illustrates and describes complete generating units consisting of a direct current generator mounted on the shaft of a gas engine for use in small or isolated plants or in country houses outside the distribution district of the central station. The description of these sets is rather detailed and the illustrations show a number of ways in which the current from such a set can be utilized.

Ball Bearings.—International Engineering Company of New Jersey, 1779 Broadway, New York. Catalogue. Concerned with radial and thrust ball bearings for automobiles, motor boats, electrical machinery and all other engineering applications manufactured by the Societe Francaise des Roulements a Billes, which this firm represents in the United States. The introduction is a reprint from *Machinery*, describing the bearings and the theory of their design, and is followed by illustrations and tables of dimensions of the different styles made. These include radial bearings, adapter bearings, thrust bearings, thrust collars, and magneto bearings for use where the radial load is light and there is in addition a slight axial thrust.

Belting.—The January number of *Phoenix*, a journal devoted to belt engineering, published by the New York Leather Belting Company, 51 Beekman street, New York, is the first to make its appearance in the enlarged size of 9 x 12 in. There are a number of short articles on different phases of the belting question and all are illustrated, showing the employment of leather belting for widely different uses. A diagram showing how the different kinds of Phoenix belts are cut from the hide is also included.

Wire Cable Conveyers and Elevator Buckets.—The Jeffrey Mfg. Company, Columbus, Ohio. Two booklets; one, No. 33 refers to the line of wire cable conveyers built by this company and contains numerous illustrations of conveyers in actual use handling pulp wood, shavings, mill refuse, lumber, bundles of wood pulp, and coal. The Jeffrey wire cable car haul and parts of the conveyers are also shown. Booklet No. 34 lists the different kinds of steel elevator buckets in all the varying shapes and shows a number of schemes of installation.

Machine Tools.—The Garvin Machine Company, Spring and Varick streets, New York City. Catalogue, edition G., 4 x 6 in., 92 pages. Illustrates and describes spring coiling machines, cutter and surface grinders, milling and screw machine tools and attachments, friction and cone pulleys, hand lathes, and countershafts and hangers. A large part of this book is devoted to illustrations and descriptions of the different attachments, with tables of general information. An insert giving a list of special and regular machines for manufacturing automobile parts is included.

Punching and Shearing Machines.—Badger State Machine Company, Janesville, Wis. Two folders. One deals with the company's line of power splitting and alligator shears for cutting all kinds of sheet metal from the light weight sheets used by sheet metal workers to heavy boiler plates of any width or length. The other pertains to a line of combined power punches and shears made in five sizes for cutting round iron ranging from 1 to 2¼ in. in diameter and punching ½ to 1 in. iron.

Molding Sand Machinery.—The Standard Sand & Machine Company, Cleveland, Ohio. Catalogue No. 5. Illustrations and descriptive matter explain the use of a line of sand mixing, screening, tempering, elevating and conveying machinery for continuous preparation of molds and cores. These machines, it is stated, are also adapted to any plant where sand, gravel, broken stone, coke, iron or coal have to be mixed, screened, elevated or conveyed. A list of plants using the sand handling equipment of this company is given at the end of the catalogue.

Machines and Small Tools.—The Cleveland Punch & Shear Works Company, Cleveland, Ohio. Hand book and stock list No. 3; size 4¼ x 7 in., 56 pages. Covers machines and small tools for the fabrication of iron and steel shapes, including punches, shears, coping machines, bending rolls, planers, radial drills and smaller hand tools. A number of tables giving useful information are included.

Calendar.—The tenth of a series of monthly card calendars has been issued by the Consolidated Press & Tool Company, Hastings, Mich., calling attention to the advantages of its line of power presses.

Bearings.—Geo. V. Cresson Company, Philadelphia and New York (90 West street). Calendar for February. Illustrates the Cresson Philadelphia pattern rigid ring-oiling bearing lined with Babbitt metal for a 10-in. shaft.

Hardware Specialties.—Niagara Falls Metal Stamping Works, Niagara Falls, N. Y. Catalogue No. 15. Lists the various lines manufactured by this company, which include harness, halter, hame, dog and coil chains; tent and tethering pins, iron rings, hasps, sash chains and fixtures, wall ties and plugs, key chains and rings, seal presses, metal letters, embossed sheet metal signs, key, baggage and time checks; steel stamps and name plates.

Calendar.—Shelby Spring Hinge Company, Shelby, Ohio, manufacturer of double-acting door hinges, spring butts and builders' hardware, has issued a calendar hanger measuring 17 x 16 in. The upper portion of the hanger bears illustrations of two specialties of this firm, the Shelby Chief floor hinge and the Shelby spring butt, while the lower half contains the calendar pad, which fills practically the entire space and has the figures printed in white on a contrasting background.

Firebrick.—The Scioto Fire Brick Company, Sciotoville, Ohio. Catalogue. Deals with firebrick for blast furnaces, hot blast stoves, open hearth furnaces, soaking pits, coke ovens, cupolas, rolling mills, malleable iron works, glass works, cement kilns, steel furnaces and boiler settings and ground fireclay. There is a brief outline of the methods employed in the manufacture of the bricks, followed by illustrations and descriptions of the various kinds of firebrick made. A number of tables showing the quantity of different styles and sizes of brick required to form circles of various diameters and giving general information of interest to all furnace workers, such as the working temperatures of metals, the melting points of various substances, and the number of heat units required for the combustion of various substances in oxygen, are included.

Flask Stripping Molding Machine.—The Osborn Mfg. Company, 5401 Hamilton avenue, N. E., Cleveland, Ohio. Catalogue No. 124. Illustrations and descriptive matter explain the operation of the Osborn adjustable flask stripping molding machine. The principal features of this machine are the elimination of stripping plates, adjustment of each size to four widths and 15 lengths, a straight smooth draw, interchangeability, and strong and simple construction.

Turbine Pumps.—International Steam Pump Company, 115 Broadway, New York. Two bulletins. No. W 175 shows the latest designs of Worthington turbine pumps for high head service in water works, mine pumping, hydraulic elevator and house tank service, hydraulic mining, and as fire and boiler feed pumps. A special type of split casing pump is shown that has been designed to meet the conditions existing particularly in sugar factories and gas plants, where the pumps are frequently called upon to handle material which leaves a deposit inside the pump. No. W 176 describes and illustrates the Worthington type D centrifugal pump, that is especially suitable for draining cofferdams and excavations and also for small irrigation plants where low first cost is more important than economy in operation. The illustrations in both bulletins show the pumps arranged for operation by belt or direct connection to electric motors, steam and gas engines or other forms of prime movers.

CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from store—

Refined Iron:
1 to 1⅞ in. round and square } ₩ lb 2.00¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.20¢
Rods—⅜ and 11-16 round and square ₩ lb 2.20¢
Angles: Cts ₩ lb
3 in. x ¼ in. and larger 2.25¢
3 in. x 3-16 in. and ⅛ in. 2.50¢
1½ to 2½ in. x ¼ in. 2.35¢
1½ to 2⅝ in. x 3-16 in. and thicker 2.25¢
1 to 1¼ in. x 3-16 in. 2.35¢
1 to 1¼ x ⅛ in. 2.45¢
⅞ x ⅛ in. 2.55¢
¾ x ⅛ in. 2.65¢
⅝ x ⅛ in. 3.70¢
½ x 3-32 in. 4.50¢
Tees:
1 in. 2.80¢
1¼ in. 2.60¢
1½ to 2½ x ¼ in. 2.30¢
1½ to 2½ x 3-16 in 2.50¢
3 in. and larger 2.30¢
Beams 2.25¢
Channels, 3 in. and larger 2.25¢
Bands—1½ to 6 x 3-16 to No. 8 2.45¢
"Burden's Best" Iron, base price 3.15¢
Burden's "H. B. & S." Iron, base price 2.95¢
Norway Bars 3.50¢

Merchant Steel from Store—

per lb
Bessemer Machinery 2.00¢
Toe Calk, Tire and Sleigh Shoe 2.50@3.00¢
Best Cast Steel, base price in small lots 7¢

Sheets from Store—

Black

	One Pass, C.R Soft Steel.	R. G. Cleaned.
No. 16	₩ lb 2.90¢	3.00¢
Nos. 18 to 21	₩ lb 2.95¢	3.10¢
Nos. 22 and 24	₩ lb 3.05¢	3.20¢
No. 26	₩ lb 3.10¢	3.30¢
No. 28	₩ lb 3.20¢	3.50¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 12 @14½
Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 14 to 16 ₩ lb, 3.20¢
Nos. 22 to 24 ₩ lb, 3.35¢
No. 26 ₩ lb, 3.75¢
No. 28 ₩ lb, 4.10¢
No. 20 and lighter 36 inches wide, 10¢ higher.

Genuine Iron Sheets—Galvanized.

Nos. 22 and 24 ₩ lb 5.75¢
No. 26 ₩ lb 6.25¢
No. 28 ₩ lb 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd.
No. 24	₩ 100 sq. ft. $3.35	4.80
No. 26	₩ 100 sq. ft. 2.95	4.00
No. 28	₩ 100 sq. ft. 2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)
"A.A.A." Charcoal:
IC, 14 x 20 $6.35
IX, 14 x 20 7.60
A. Charcoal:
IC, 14 x 20 $5.40
IX, 14 x 20 6.50

American Coke Plates—Bessemer—
IC, 14 x 20 107 lb $4.40
IX, 14 x 20 5.40

American Terne Plates—
IC, 20 x 28 with an 8 lb. coating $8 50
IX, 20 x 28 with an 8 lb. coating 10.50

Bolts—

Carriage, Machine, &c,—
Common Carriage (cut thread):
⅝ x 6 and smaller 70&7½%
Larger and longer 65&5%
Common Carriage (rolled thread):
⅝ x 6, smaller and shorter 70&12½%
Phila. Eagle, $3.00 list 80&5@80&10%
Bolt ends with C. & T. Nuts 65&5%
Machine (Cut Thread):
⅝ x 4 and smaller 70&12½%
Larger and longer 65&10%

Nuts

Blank or Tapped.

Cold Punched:	Off list.
Square	4.90¢
Hexagon	5.50¢
Square, C., T. & R	5.30¢
Hexagon, C., T. & R	6.10¢
Hot Pressed:	Off list.
Square	5.40¢
Hexagon	5.80¢

Seamless Brass Tubes—

List November 13, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 22¢

Brazed Brass Tubes—

List August 1, 1908. 20¾¢ ₩ lb

High Brass Rods—

List August 1, 1908. 15¼¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 15¼¢ ₩ lb

Brass Wire—

List August 1, 1908. 15¼¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 15¼¢

METALS—

Tin—

Straits Pig ₩ lb 36@36½¢

Copper—

Lake Ingot ₩ lb 14¾@15 ¢
Electrolytic ₩ lb 14¾@15 ¢
Casting ₩ lb 14¼@14½¢
Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot
Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot
Planished Copper, 1¢ ₩ square foot more than Polished

Spelter—

Western ₩ lb 6¾@7 ¢

Zinc.

No 9, base, casks ₩ lb 8¼¢ | Open ₩ lb 8¾¢

Lead.

American Pig ₩ lb 5½@5¾¢
Bar ₩ lb 6¾@6½¢

Solder.

½ & ½, guaranteed ₩ lb 21½@22 ¢
No. 1 ₩ lb 18½@19 ¢
Refined ₩ lb 16¾@17 ¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson ₩ lb ..@10¢
Hallett's @10¢
Other Brands @9½¢

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting 24¢
Rods & Wire Base Price 31¢
Sheets Base Price 33¢

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut an; crucible	₩ lb 11.75@12.00
Copper, heavy and Wire	₩ lb 11.25@11.50
Copper, Light and Bottoms	₩ lb 10.25@10.50
Brass, Heavy	₩ lb 8.00@ 8.25
Brass, Light	₩ lb 6.50@ 6.75
Heavy Machine Composition	₩ lb 10.50@10.75
Clean Brass Turnings	₩ lb 7.50@ 7.75
Composition Turnings	₩ lb 8.75@ 9.00
Lead, Heavy	₩ lb ...@ 3.75
Lead, Tea	₩ lb ...@ 3.50
Zinc Scrap	₩ lb ...@ 4.50

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